

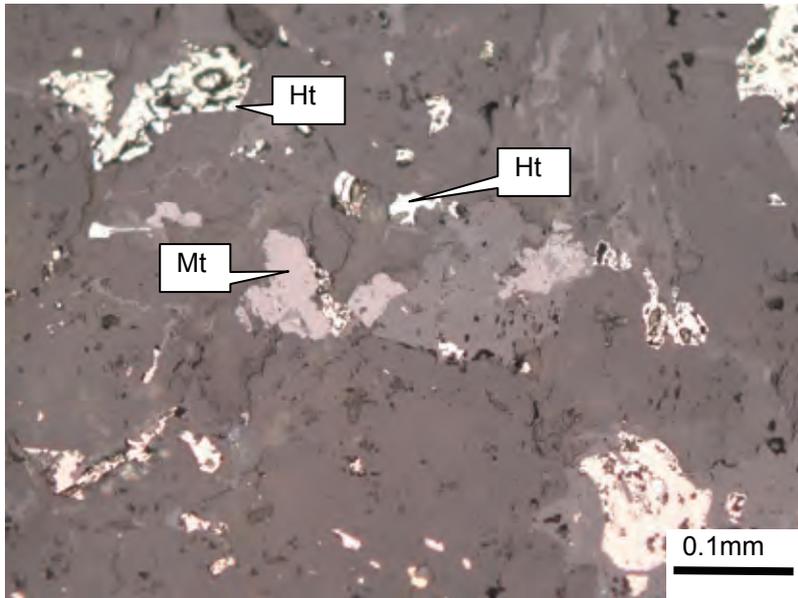
Appendix V-8 Result of Whole Rock Analysis

No.	Outcrop No.	SampleName	Sheet	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	MgO %	Na2O %	K2O %	Cr2O3 %	TiO2 %	MnO %	P2O5 %	SrO %	BaO %	LOI %	Total %
1	Lh7100210	Rh-01	1030NE	48.63	19.47	8.83	10.51	6.25	2.15	0.82	0.04	1.07	0.14	0.109	0.03	0.03	1.82	99.9
2	Lh7090721	Rh-02	1030NE	74.44	12.36	2.5	0.57	0.91	3.07	3.73	<0.01	0.53	0.04	0.085	0.01	0.1	1.31	99.65
3	LI07100803	Ri-01	1030NE	66.87	16.3	3.63	2.32	1.17	2.98	4.41	<0.01	0.48	0.09	0.247	0.03	0.12	1.22	99.86
4	Pg59	Rm-01	1030SE	61.6	16.48	5.65	4.23	2.46	3.17	3.39	<0.01	0.77	0.07	0.231	0.09	0.15	1.59	99.88
5	Pg62	Rm-02	1030SE	70.46	15.5	3.49	1.25	1.29	2.01	3.48	<0.01	0.4	0.09	0.138	0.02	0.07	1.43	99.62
6	N081101	RB002W	1130SE	68.72	12.35	6.74	0.2	1.71	2.65	1.53	0.01	0.93	0.04	0.158	0.01	0.04	3.57	98.66
7	FC20080803	RC003W	1130SE	92.85	3.39	0.55	<0.01	0.11	0.03	0.55	0.01	0.08	0.01	0.017	0.01	0.01	1.41	99.02
8	Pg70	RA006W	1030SE	71.91	14.2	2.53	0.91	0.56	2.37	5.71	<0.01	0.31	0.03	0.063	0.02	0.07	0.96	99.64
9	N091301	RB011W	1030NE	96.88	0.85	0.83	0.02	0.09	0.03	0.21	<0.01	0.03	0.01	0.017	0.01	<0.01	0.24	99.22
10	N091505	RB015W	1030NE	98.4	0.22	0.71	0.01	0.06	0.03	0.05	<0.01	0.03	0.01	0.016	0.01	<0.01	0.22	99.77
11	FC091929	RC012W	1030NE	61.72	15.53	6.14	4.05	2.79	2.28	4.18	0.01	0.74	0.11	0.24	0.04	0.13	1.86	99.82

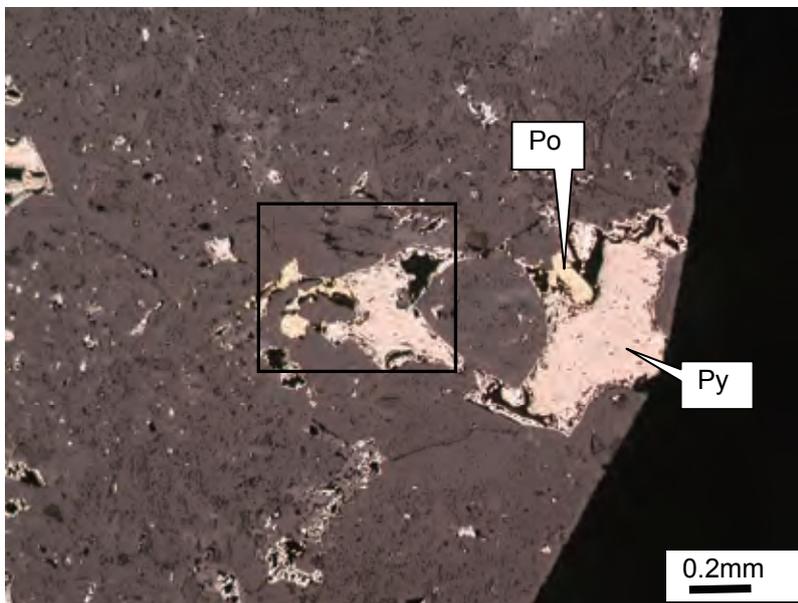
Appendix V-9 Result of Microscopic Observation of Polished Sections

Sample No. (Outcrop No.)	Observation items	Fe ₃ O ₄	Fe ₂ O ₃	FeS ₂	Fe _{1-x} S	CuFeS ₂	Field comment
		Magnetite Mt	Hematite Ht	Pyrite Py	Pyrrhotite Po	Chalcopyrite Cp	
Ph-01 (Lh7100208)	amount	*		○	○	*	Locality: Samba Lubemba
	grain size (mm)	0.001 to 0.05	0.001 to 0.1	0.001 to 0.8	0.001 to 0.1	0.002 to 0.1	Host rock: Quartzite
	form	subhedral, tabular to granular	subhedral	euhedral to subhedral		subhedral	Cp-Py-Po
	occurrence		Replaces magnetite	Skeletal structure	Replaces pyrite	Occurs near pyrrhotite	
Ph-02 (Lh7100210)	amount	△		△		△	Locality: Samba Lubemba South
	grain size (mm)	0.01 to 0.3		0.01 to 0.05		0.01 to 0.2	Host rock: Gabbro
	form	euhedral to subhedral		subhedral		euhedral to subhedral	Py-Cp
	occurrence	Skeletal structure		Replaces magnetite		Occurs in gangue minerals	
Ph-03 (Lh7090721)	amount	*	*			*	Locality: Mukanga
	grain size (mm)	0.05 to 0.2	0.001 to 0.01			0.01 to 1.8	Host rock: Metavolcanics
	form	euhedral to subhedral	subhedral			anhedral, granular	Cp impregnation
	occurrence	Dissemination	Replaces magnetite				
Pm-01 (M-29)	amount	*	*	△		*	Locality: Fisaka
	grain size (mm)	0.005 to 0.08	0.005 to 0.05	0.005 to 0.03		0.001 to 0.03	Host rock: Gabbro
	form	granular	euhedral, tabular	subhedral		anhedral	
	occurrence		Replaces magnetite	Replaces magnetite		Occurs in gangue minerals	
Pi-01 (Li07100305)	amount	△	△	*		*	Locality: Fitawa stream
	grain size (mm)	0.05 to 0.4	0.01 to 0.05	0.01 to 0.2		0.002 to 0.01	Host rock: Gabbro
	form	subhedral to euhedral	euhedral, tabular	subhedral		subhedral	Mt-Py impregnation
	occurrence	Occurs as tabular and granular	Replaces magnetite			Occurs in gangue minerals	

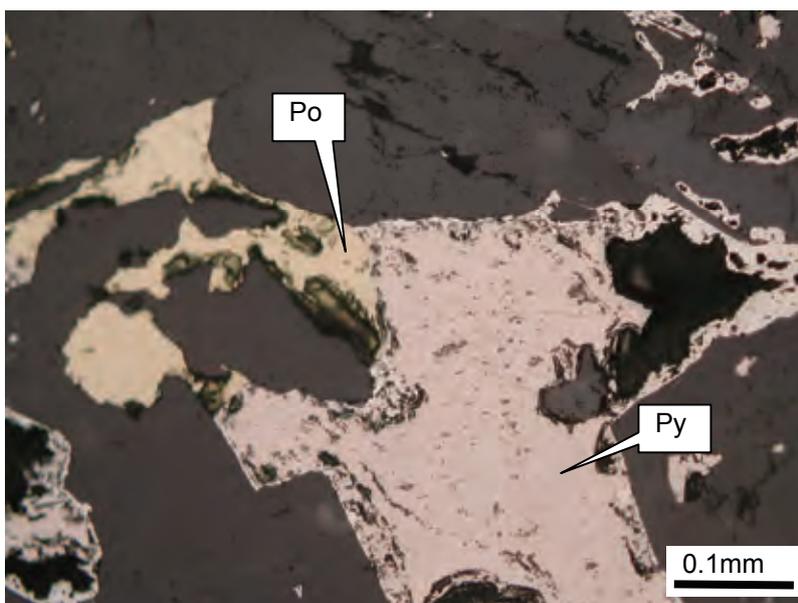
Amount: ◎ Abundant (>15%), ○ Moderate (15% - 5%), △ Small (5% - 1%), * Very small (<1%)



Hematite replaces magnetite.
Mt: magnetite, Ht: hematite.
Reflected light on polished section

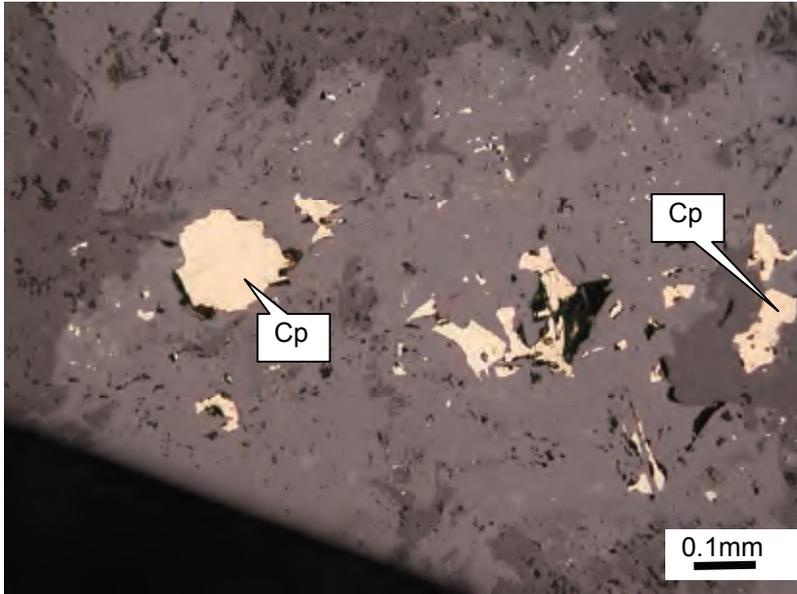


Occurrence of pyrite and pyrrhotite.
Py: pyrite, Po: pyrrhotite
Reflected light on polished section.
The area marked with a black frame refers to the below photomicrograph.

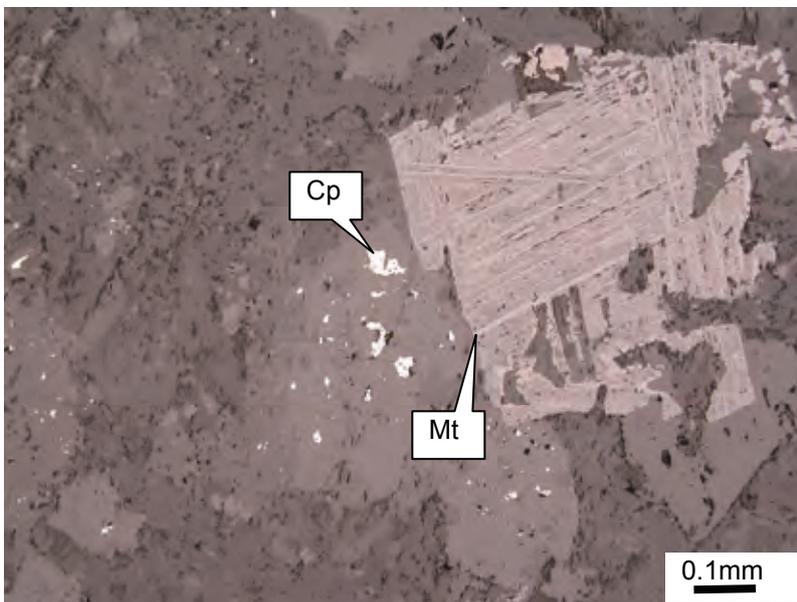


Pyrrhotite replaces pyrite.
Py: pyrite, Po: pyrrhotite
Reflected light on polished section.

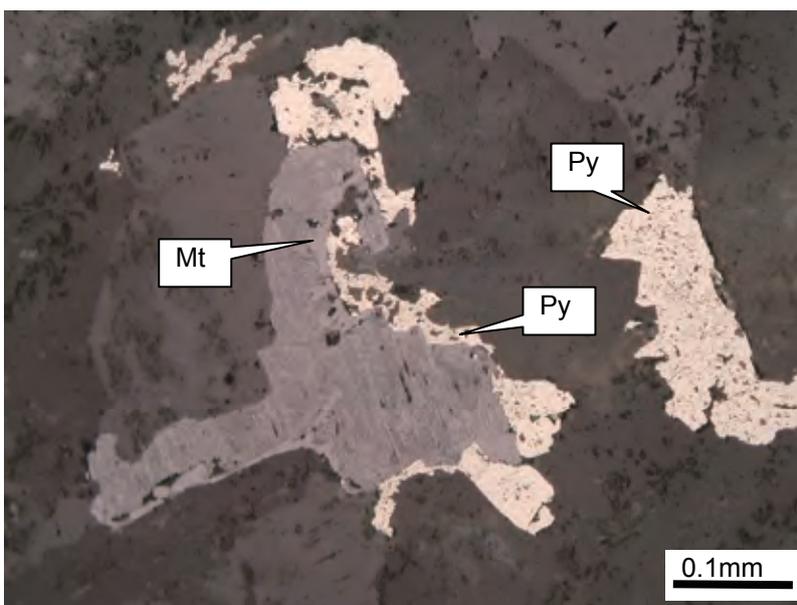
Photomicrographs of Ph-01



Occurrence of subhedral chalcopyrite.
Cp: chalcopyrite.
Reflected light on polished section.

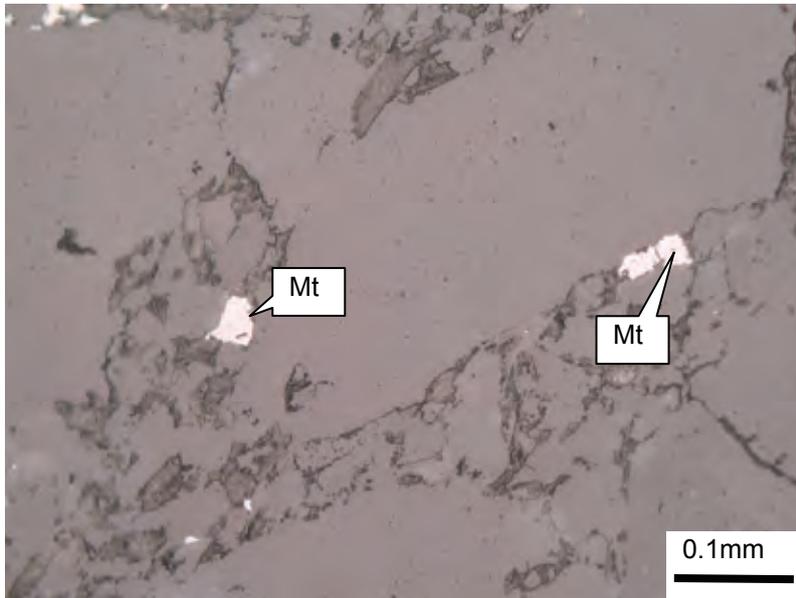


Occurrence of skeletal euhedral magnetite. Chalcopyrite disseminates in gangue minerals.
Mt: magnetite, Cp: chalcopyrite.
Reflected light on polished section.



Occurrence of pyrite replacing magnetite.
Mt: magnetite, Py: pyrite.
Reflected light on polished section.

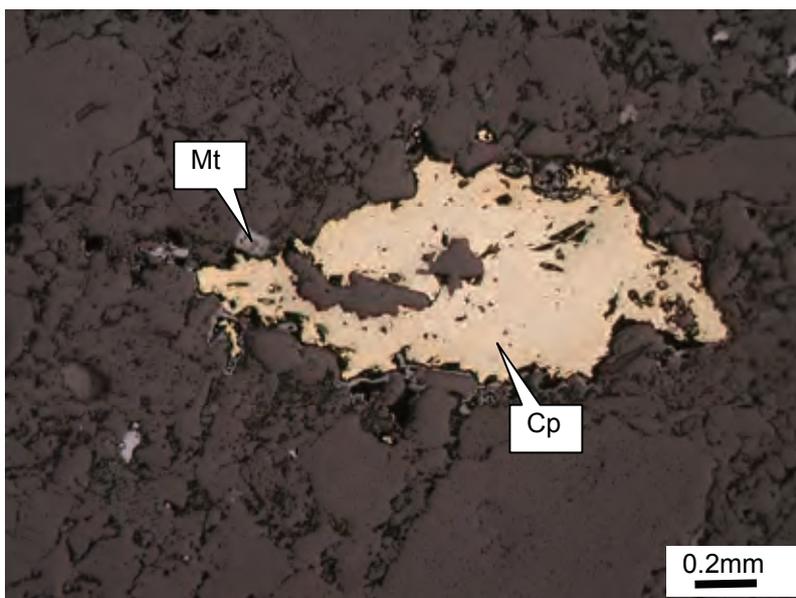
Photomicrographs of Ph-02



Occurrence of euhedral magnetite.
Mt: magnetite.
Reflected light on polished section.

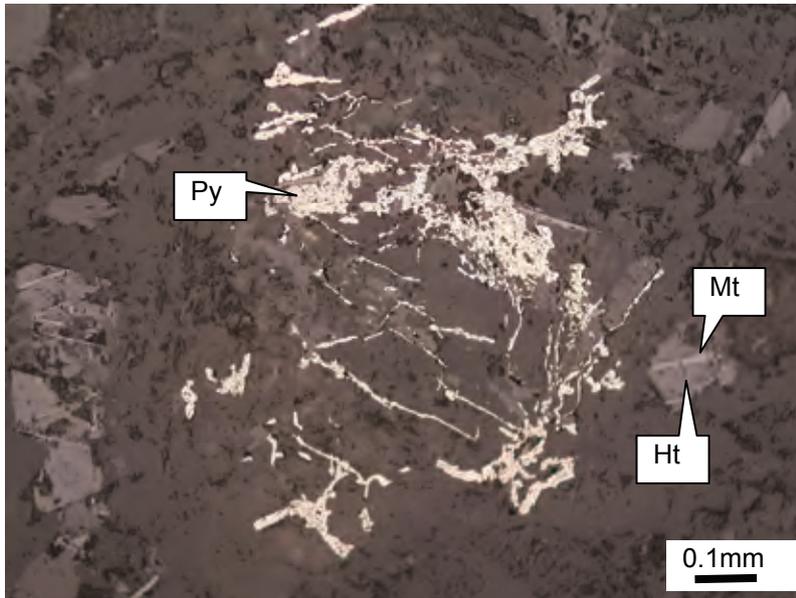


Hematite after replaced magnetite.
Ht: hematite.
Reflected light with crossed nicols on polished section.

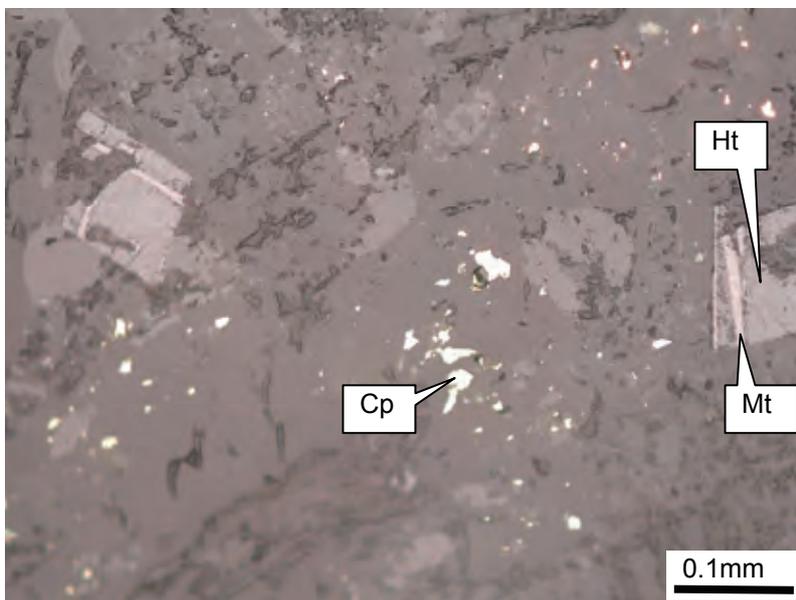


Occurrence of magnetite and chalcopyrite.
Mt: magnetite, Cp: chalcopyrite.
Reflected light on polished section.

Photomicrographs of Ph-03

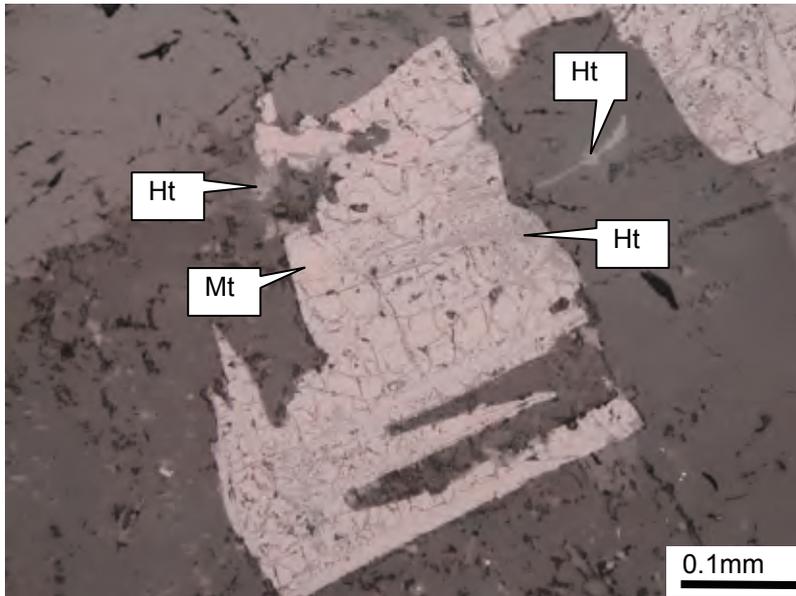


Occurrence of magnetite, hematite and pyrite. Hematite replaces magnetite. Pyrite forms aggregates of subhedral crystals. Mt: magnetite, Ht: hematite, Py: pyrite. Reflected light on polished section.

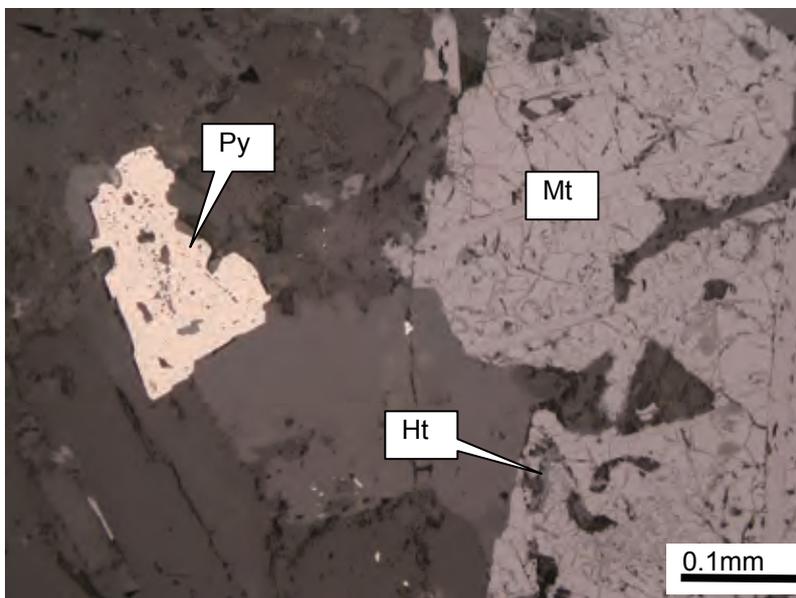


Occurrence of magnetite, hematite and chalcopyrite. Hematite replaces euhedral magnetite. Chalcopyrite occurs as dots in gangue minerals. Mt: magnetite, Ht: hematite, Cp: chalcopyrite. Reflected light on polished section.

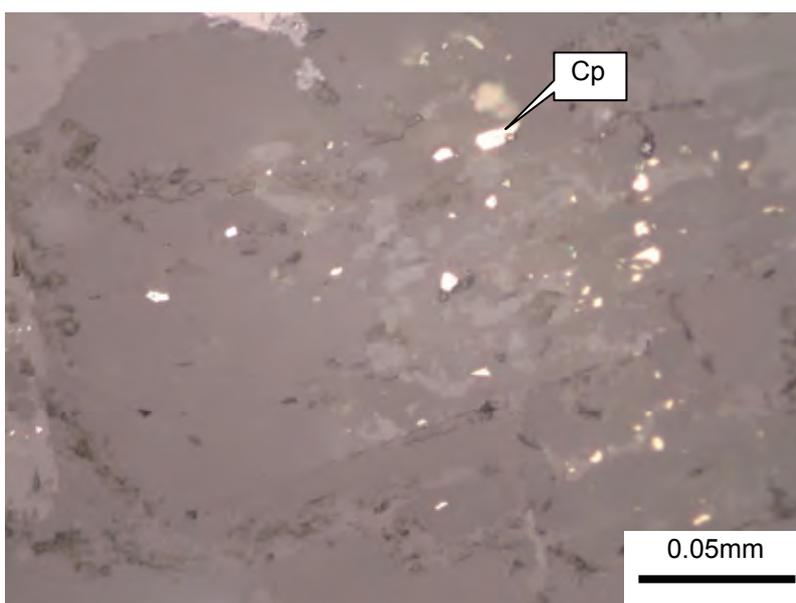
Photomicrographs of Pm-01



Occurrence of euhedral magnetite.
 Hematite replaces magnetite along cracks.
 Mt: magnetite, Ht: hematite.
 Reflected light on polished section.



Occurrence of euhedral crystals of magnetite and pyrite.
 Hematite replaces magnetite along cracks.
 Mt: magnetite, Ht: hematite, Py: pyrite.
 Reflected light on polished section.



Chalcopyrite occurs as dots in gangue minerals.
 Cp: chalcopyrite.
 Reflected light on polished section.

Photomicrographs of Pi-01

Appendix V-10 Result of Chemical Analysis of Rock/Ore Samples 1/2

No.	Outcrop No.	Sample Name	Sheet	Remark	Type	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S	Sb	
1	Ld001	Gd-01	1030NE		Rock	<0.001	0.02	5.77	2.4	5.10	1.62	0.19	0.12	<0.02	102.5	6.6	14	2.1	3.4	2.46	15.1	0.15	4.1	0.034	2.38	47.9	0.98	182	0.42	1.54	10.7	11.2	370	5.1	117.5	<0.002	0.01	0.16		
2	Ld003	Gd-02	1030NE		Rock	<0.001	0.01	5.6	2.3	5.30	1.57	0.19	0.11	<0.02	114	6.3	9	1.45	3.3	2.26	14.7	0.16	3.9	0.034	2.32	52.8	0.93	171	0.24	1.48	10.6	11.4	350	5.7	113.5	<0.002	0.01	0.15		
3	Ld033	Gd-04	1030SE		Rock	<0.001	0.03	7.46	2.3	1220	1.78	0.02	0.18	0.02	62.6	8.6	9	2.32	1.4	2.1	0.14	2.4	0.02	3.19	30.3	23.8	0.48	341	0.57	2.36	6	12.1	460	24.1	119	<0.002	0.06	<0.05		
4	Ld051	Gd-05	1030SE		Rock	<0.001	0.04	7.12	2.1	170	1.04	0.05	0.68	0.17	42.4	48.7	11.4	1.74	91.4	22.7	0.14	22.7	0.15	3.6	0.096	0.61	18.1	1.62	3.9	1445	0.74	17.1	13.6	84.6	11.30	6.7	35.2	<0.002	0.15	0.07
5	Ld0792701	Gi-01	1030NE		Rock	<0.001	<0.01	0.16	3.3	10	0.09	0.03	0.03	<0.02	8.89	0.7	23	0.12	4.3	0.58	0.71	<0.05	0.5	0.009	0.05	4.9	1.6	0.02	2.7	0.59	0.01	0.7	1.2	30	2.2	3	<0.002	0.01	0.07	
6	Ld107100301	Gi-02	1030NE		Rock	<0.001	0.06	6.46	6	30	1.46	0.17	0.35	0.15	0.15	0.4	5	24.1	1.2	3.8	20.9	0.05	1	0.046	1.54	2.1	22.4	0.05	1.78	0.27	4.1	12.7	0.8	10.40	16.3	190	<0.002	<0.01	0.19	
7	Ld107100302	Gi-03	1030NE		Rock	<0.001	0.06	3.7	6.8	30	1.87	0.07	0.27	0.03	96.2	4.5	34	15.5	12.5	2.46	8.78	0.14	7.1	0.023	0.98	46.6	14.8	0.36	11.9	0.23	1.48	11.9	9.6	450	9.3	43.5	<0.002	<0.01	0.79	
8	Ld107100303	Gi-04	1030NE		Rock	<0.001	0.15	7.58	5.3	1280	2.52	1.2	2.12	0.28	83.5	66.4	20	7.25	57.5	20.9	17.9	0.13	3.7	0.04	2.54	86.6	103.5	0.92	5.13	0.36	2.47	15.6	48.4	520	46.5	123.5	0.11	0.97	0.08	
9	Ld107100304	Gi-05	1030NE		Rock	<0.001	0.04	7.38	3.0	390	0.31	1.04	2	0.08	167.5	44	25	1.81	38.9	2.83	21.7	0.21	3.7	0.04	2.54	86.6	103.5	0.92	5.13	0.36	2.47	15.6	48.4	520	46.5	123.5	0.11	0.97	0.08	
10	Ld107100305	Gi-06	1030NE		Rock	<0.001	0.04	7.38	3.0	390	0.31	1.04	2	0.08	167.5	44	25	1.81	38.9	2.83	21.7	0.21	3.7	0.04	2.54	86.6	103.5	0.92	5.13	0.36	2.47	15.6	48.4	520	46.5	123.5	0.11	0.97	0.08	
11	Ld107100306	Gi-07	1030SE		Rock	<0.001	0.03	7.85	5.5	210	1.6	0.07	0.21	0.04	69.5	9.9	25	1.92	10.9	1.86	9.95	0.14	3.9	0.023	0.92	29.8	8.6	0.26	20.8	0.35	1.96	14.3	11.5	1140	158.5	36.3	<0.002	0.05	0.25	
12	Ld107100307	Gi-08	1030SE		Rock	<0.001	0.03	7.85	5.5	210	1.6	0.07	0.21	0.04	69.5	9.9	25	1.92	10.9	1.86	9.95	0.14	3.9	0.023	0.92	29.8	8.6	0.26	20.8	0.35	1.96	14.3	11.5	1140	158.5	36.3	<0.002	0.05	0.25	
13	Ld107100308	Gi-09	1030SE	host rock	Rock	<0.001	0.03	7.85	5.5	210	1.6	0.07	0.21	0.04	69.5	9.9	25	1.92	10.9	1.86	9.95	0.14	3.9	0.023	0.92	29.8	8.6	0.26	20.8	0.35	1.96	14.3	11.5	1140	158.5	36.3	<0.002	0.05	0.25	
14	Ld107100309	Gi-10	1030SE		Rock	<0.001	0.01	0.12	3.2	10	<0.05	0.11	0.05	<0.02	3.87	0.7	7	3.31	12.9	1.85	18.7	0.16	6	0.038	4.89	42.3	7.1	0.3	4.1	0.71	0.01	0.01	0.1	1.5	40	13.3	0.9	<0.002	0.01	0.11
15	Ld107100310	Gi-11	1030SE		Rock	<0.001	0.02	1.32	98.3	2.60	0.3	3.13	0.05	0.6	33.9	51.2	9	0.42	17.63	10.3	3.65	0.09	1.2	0.026	0.96	2.2	2.9	0.1	1.16	0.98	0.32	1.2	1.5	140	19.6	23.9	0.002	0.32	8.62	
16	Ld107100311	Gi-12	1030NE		Rock	<0.001	0.03	6.44	27.9	90	2.85	0.63	0.48	<0.02	65.9	3.7	29	1.71	53.2	4.68	14.28	0.28	5	0.007	0.47	21.5	5	0.16	4.27	10.7	0.71	27.5	20.9	1780	31	29.9	<0.002	0.01	0.45	
17	Ld107100312	Gi-13	1030NE		Rock	<0.001	0.06	6.46	8.5	640	2.4	1.43	3.07	0.09	128.5	47.8	3	1.85	46.8	10.58	14.28	0.28	13.1	0.195	2.26	58.8	10.7	1.68	20.50	1.95	1.62	33.6	8.9	3560	7.7	83.4	<0.002	0.16	0.45	
18	Ld107100313	Gi-14	1030NE		Rock	<0.001	0.02	7.19	1.8	750	2.03	0.13	3.07	0.09	87.8	41.5	9	2.75	27.5	7.27	22.3	0.2	5.5	0.075	2.19	40.3	27.3	1.78	10.60	0.82	2.26	10.2	19	1440	21.8	100.5	<0.002	0.09	0.06	
19	M12	Gi-01	1030NE		Rock	<0.001	0.02	7.51	3.6	620	4.03	0.7	1.92	0.22	89.7	58.5	13	10.35	45.5	2.11	21.9	0.16	4	0.05	2.69	42.4	63.2	0.6	4.76	0.46	2.57	18.9	14.9	510	97.8	24.8	0.007	0.09	0.13	
20	M29	Gi-02	1030NE		Rock	<0.001	0.03	9	3.8	230	0.56	0.09	0.06	0.11	22.3	51.3	156	6.23	31.9	6.62	20.6	0.13	2.1	0.052	0.97	29.9	65.5	3.9	12.75	0.32	1.92	6.3	73.7	420	21.7	55.4	<0.002	0.04	0.08	
21	Drilling Core 1	Gi-01	1030NE		Rock	<0.001	<0.01	6.46	1.9	360	2.27	0.06	0.7	0.02	54.3	9.8	20	0.51	18.6	2.22	19.7	0.12	3.2	0.075	1.96	25.6	38.2	0.89	6.1	0.36	2.55	9.2	17.7	380	1.6	63.1	<0.002	0.83	0.08	
22	Drilling Core 2	Gi-02	1030NE		Rock	<0.001	0.08	7.9	2.6	90	1.12	0.05	0.13	0.03	46.9	73.7	167	10.7	75.8	20	0.21	2.4	0.514	0.89	23.4	45.3	3.81	386	1.02	3.23	12.5	48.4	1000	21	24.3	0.002	0.11	0.14		
23	Drilling Core 3	Gi-03	1030NE		Rock	<0.001	<0.01	7.11	4.5	10	1.31	0.01	2.74	<0.02	92.1	2.7	13	0.05	2.1	0.59	19.4	0.15	4.7	0.005	0.67	43.9	1	2.64	9.3	0.13	5.64	5.5	12.3	940	3.1	1.8	<0.002	<0.01	0.34	
24	Drilling Core 4	Gi-04	1030NE		Rock	<0.001	0.02	3.78	5.2	30	0.59	0.16	8.68	0.02	4.7	7.7	12	0.76	4.6	0.89	5.83	0.15	3.3	<0.005	0.45	22.5	0.6	0.86	10	0.43	2.5	2	9.4	30	22.6	<0.002	8.35	<0.05		
25	Drilling Core 5	Gi-05	1030NE		Rock	<0.001	0.21	0.05	2.5	10	0.01	0.01	4.08	<0.02	2.01	0.5	<1	0.06	1.6	1.63	0.2	0.05	<1	0.066	0.04	1	1.3	18.1	11.60	0.12	0.01	0.1	0.7	40	2.2	1.6	0.002	3.49	<0.05	
26	Drilling Core 6	Gi-06	1030NE		Rock	0.034	0.02	9.97	<5	50	0.65	0.01	17.25	0.02	5.6	3.7	<1	<0.005	1.5	0.55	0.49	0.1	0.1	0.039	0.02	2.8	2	12.6	13.70	2.55	<0.01	0.3	0.7	120	2	0.4	<0.002	>10.0	<0.05	
27	Drilling Core 7	Gi-07	1030NE		Rock	<0.001	0.04	5.8	52.6	360	2.24	0.07	1.41	<0.02	63.5	16.7	30	2.56	3.3	2.25	13.7	0.15	3.6	0.062	4.31	31.8	60.5	4.6	17.6	0.94	0.27	8.1	16.5	440	3.2	14.2	<0.002	1.21	0.09	
28	Drilling Core 8	Gi-08	1030NE		Rock	<0.001	0.04	4.75	2.6	300	2.22	0.05	5.83	<0.02	124	29.5	25	2.75	1.6	1.97	1.5	0.21	3.7	0.059	4.35	71	52.7	3.22	71.4	0.17	0.24	17.1	19.1	520	3.2	14.2	<0.002	0.02	<0.05	
29	Drilling Core 9	Gi-09	1030NE		Rock	<0.001	0.01	6.42	8.6	460	1.35	0.09	1.12	<0.02	46.6	10	12	0.92	13.2	11.7	7.19	0.15	1.6	0.027	3.8	21.2	16.8	0.6	10.4	0.18	1.97	6.1	4.7	300	8.4	96.2	<0.002	0.45	<0.05	
30	Drilling Core 10	Gi-10	1030NE		Rock	<0.001	<0.01	3.88	4.8	280	1.29	0.02	6.42	<0.02	46.6	10	12	0.92	13.2	11.7	7.19	0.15	1.6	0.027	3.8	21.2	16.8	0.6	10.4	0.18	1.97	6.1	4.7	300	8.4	96.2	<0.002	0.45	<0.05	
31	Drilling Core 11	Gi-11	1030NE		Rock	<0.001	<0.01																																	

Appendix V-10 Result of Chemical Analysis of Rock/Ore Samples 2/2

No.	Outcrop No.	Sample Name	Sheet	Remark	Type	Sc	Se	Sh	Sr	Ta	Te	Th	Ti	Ti	U	V	W	Y	Zn	Zr	Dy	Er	Eu	Gd	Ho	Lu	Nd	Pr	Sm	Tb	Tm	Yb		
1	Ld001	Gd-01	1030NE		Rock	9.4	8	19	38.5	0.84	<0.05	1.59	0.226	0.37	3	40	1.3	17.6	31	127	3.42	2.13	1.46	6.62	0.86	0.35	41.5	11.3	7.2	0.78	0.3	2.12		
2	Ld008	Gd-02	1030NE		Rock	9.4	6	18	37.5	0.83	<0.05	1.56	0.223	0.37	2.9	37	1.3	16.8	28	121	3.55	2.09	1.51	6.95	0.86	0.35	44.6	12.3	7.69	0.81	0.29	2.12		
3	Ld033	Gd-04	1030SE		Rock	5.9	8	14	64.4	0.47	<0.05	0.9	0.187	0.53	1	35	0.2	2.96	11	135	6.09	3.33	1.96	6.24	1.19	0.33	25.1	5.68	5.97	1.08	0.43	2.77		
4	Ld051	Gd-05	1030SE		Rock	4.3	7	16	25.4	<0.01	<0.05	2.5	1.32	0.2	0.4	31.0	0.2	29.6	11	135	6.09	3.33	1.96	6.24	1.19	0.33	25.1	5.68	5.97	1.08	0.43	2.77		
5	Ld0792701	GI-01	1030NE		Rock	4.7	11	02	3.2	<0.05	<0.05	1.1	0.019	<0.02	0.6	3	1	1.8	2	19.5	0.34	0.21	0.12	0.53	0.07	0.03	3.3	0.94	0.55	0.06	0.03	0.2		
6	Ld107100301	GI-02	1030NE		Rock	6.9	10	9.9	19.1	1.88	<0.05	1.3	0.018	0.83	2.1	5.6	2.8	15.6	26	0.58	0.27	0.11	0.56	0.09	0.06	2	0.58	0.62	0.1	0.05	0.42			
7	Ld107101501	GI-03	1030NE		Rock	6	11	24	58.3	1.86	<0.05	1.2	0.018	0.83	3.1	39	0.7	34.3	33	241	6.98	3.74	1.72	8.88	1.32	0.49	47.4	12.4	9.29	1.35	0.51	3.32		
8	Ld107081205	GI-04	1030NE		Rock	10.6	12	2.2	27.4	14.25	0.24	17.6	0.257	0.85	7	53	930	24.6	141	145	4.32	2.49	1.6	5.97	0.83	0.37	33.1	9.33	5.98	0.85	0.35	2.34		
9	Ld107081903	GI-05	1030NE		Rock	11.3	9	2.5	29.3	11.55	0.24	17.6	0.257	0.85	3.8	56	860	35.4	72	123	6.97	3.7	2.11	11.6	1.93	0.44	70.4	19.2	12	1.5	0.47	3.03		
10	Ld107082005	GI-06	1030NE		Rock	34.6	9	1.3	47.1	3.36	<0.05	2.4	1.095	0.33	0.6	279	168	27	216	148	5.6	2.97	1.9	6.09	1.08	0.36	24.7	5.61	5.87	1	0.38	2.44		
11	Ld107082005	GI-01	1030SE		Rock	6.9	10	1.2	76	1.08	<0.05	6.7	0.317	0.29	1.6	1.5	49.4	52	132	7.08	4.27	1.83	8.05	1.46	0.54	35.9	8.87	7.49	1.21	0.38	2.74			
12	Ld107082005	GI-02	1030SE		Rock	8.4	10	1.2	76	1.08	<0.05	6.7	0.317	0.29	1.6	1.5	49.4	52	132	7.08	4.27	1.83	8.05	1.46	0.54	35.9	8.87	7.49	1.21	0.38	2.74			
13	Ld107082005	GI-03	1030SE	host rock	Rock	0.7	10	0.2	2.4	<0.05	<0.05	1.9	<0.008	<0.26	0.3	3	0.3	26.9	51	186	5.28	3.11	2.04	6.89	1.02	0.49	36.9	10.2	7.05	1.01	0.44	3.1		
14	Ld107081304	GH-03	1030NE		Rock	4.5	12	10.7	22.8	1.16	<0.27	1.2	0.12	0.82	1	20	390	21.2	37	63.4	3.71	2.15	0.94	4.57	0.72	0.29	23.6	6.12	4.37	0.69	0.29	1.88		
15	Ld107081304	GH-04	1030NE		Rock	7	8	2.5	94.5	6.64	<0.05	17.4	0.159	0.07	7.7	137	278	15	4	187	3.32	2.04	0.54	3.57	0.66	0.32	18.7	5.15	3.82	0.58	0.31	2.13		
16	Ld107081308	GH-05	1030NE		Rock	35	9	5.3	20.6	8.64	<0.05	9.4	14.75	0.22	1.7	155	335	80.8	146	478	16.2	8.96	4.96	17.3	3.18	1.11	71.3	16.8	16.35	2.89	1.2	7.57		
17	Ld107081308	GH-01	1030NE		Rock	29.4	7	2	32.1	2.94	<0.05	9.4	0.453	0.56	1.8	303	173	36.2	9.3	206	7.3	4.05	2.3	8.7	1.39	0.53	41.4	10.5	8.47	1.38	0.54	3.59		
18	MM13	Gm-01	1030NE		Rock	9.2	9	2	259	17.85	<0.05	23.3	0.238	1.38	6.5	48	111.0	18.4	104	127	3.84	1.95	1.42	6.38	0.69	0.22	37.7	10.3	6.92	0.84	0.24	1.49		
19	MW9	Gm-02	1030NE		Rock	26.9	8	1	277	4.01	<0.05	0.9	0.544	0.16	0.2	163	246	19.1	11.4	69	3.69	2.09	1.22	3.5	0.74	0.27	13.1	2.98	3.28	0.63	0.29	1.82		
20	MW9	Gm-03	1030NE		Rock	12.7	8	2.1	303	0.62	<0.05	6	0.247	0.35	1	70	1.8	14.2	5	123	3.09	1.64	1.27	4.7	0.56	0.22	25.8	6.53	4.87	0.64	0.22	1.41		
21	Drilling Core 1	Gz-01			Rock	32.9	3	1.5	282	0.84	<0.05	3.3	1.146	0.06	1.9	301	0.3	30	22	81.9	5.3	2.93	1.99	6	1.07	0.37	26.2	6.17	6.28	0.97	0.4	2.44		
22	Drilling Core 2	Gz-02			Rock	12.6	1	0.7	46.6	0.4	<0.05	14.5	0.12	<0.02	1.2	16	0.8	21.3	<2	153	4.1	2.18	1.31	5.87	0.77	0.33	39.8	10.7	7.07	0.78	0.31	2.09		
23	Drilling Core 3	Gz-03			Rock	2.9	2	0.4	10.70	0.16	<0.05	11	0.063	<0.08	1.9	14	0.3	11.5	2	98.2	2.42	1.1	0.74	3.61	0.41	0.13	20.8	5.59	4.2	0.49	0.14	0.86		
24	Drilling Core 4	Gz-04			Rock	0.2	1	0.3	55.3	<0.05	<0.05	<0.2	<0.005	<0.02	0.1	2	0.1	1	6	0.9	0.21	0.11	0.06	0.21	0.04	0.01	0.9	0.24	0.23	0.04	0.01	0.09		
25	Drilling Core 5	Gz-05			Rock	2.6	1	0.3	33.20	<0.05	<0.05	1.9	0.038	<0.08	0.9	14	0.1	2.7	6	22.1	1.37	0.62	0.43	1.82	0.23	0.06	9.4	2.42	2.04	0.26	0.08	0.45		
26	Drilling Core 6	Gz-06			Rock	0.5	1	<0.2	300	<0.05	<0.05	0.3	0.005	<0.02	0.3	0.1	2.4	6	4.5	0.45	0.22	0.12	0.53	0.08	0.02	2.6	0.7	0.61	0.08	0.03	0.17			
27	Drilling Core 7	Gz-07			Rock	5.6	2	3.3	78	1.29	<0.05	12.6	0.295	0.43	2.3	52	3.3	9	13	111	1.91	1.05	0.74	3.61	0.35	0.19	26	7.24	4.14	0.4	0.16	1.12		
28	Drilling Core 8	Gz-08			Rock	12.6	1	0.8	49.8	0.52	<0.05	15.7	0.111	0.11	5.7	14	1.1	9.7	<2	116	2.31	1.16	0.71	3.49	0.4	0.18	19.7	5.1	3.95	0.47	0.16	1.14		
29	Drilling Core 9	Gz-09			Rock	3.3	4	1.3	78.5	0.39	<0.05	8.6	0.139	0.25	1.9	25	1	10.1	7	47.1	2.11	0.98	0.72	3.32	0.37	0.11	21.4	5.58	4.11	0.43	0.13	0.77		
30	Drilling Core 10	Gz-10			Rock	6.3	4	1.5	150	0.57	<0.05	11	0.138	0.39	1.9	29	0.3	10.7	4	63.1	2.83	1.28	2.35	10.2	0.41	0.19	96.4	27	15.4	0.88	0.16	1.23		
31	Drilling Core 11	Gz-11			Rock	1.6	2	0.9	32.2	0.22	<0.05	4.6	0.278	0.37	0.9	41	0.3	10.7	4	63.1	2.83	1.28	2.35	10.2	0.41	0.19	96.4	27	15.4	0.88	0.16	1.23		
32	Drilling Core 12	Gz-12			Rock	1.6	2	0.9	32.2	0.22	<0.05	4.6	0.278	0.37	0.9	41	0.3	10.7	4	63.1	2.83	1.28	2.35	10.2	0.41	0.19	96.4	27	15.4	0.88	0.16	1.23		
33	AO90101	RA02	1130SE		Rock	5.7	3	4	86.6	0.66	<0.03	10.8	0.233	0.72	24	40	1.5	32.9	36	146														
34	AO91702	RA02	1130SE		Rock	3.8	2	17.2	25.1	0.66	<0.03	4.3	0.262	0.94	1	21	0.5	32.9	36	146														
35	AO91702	RA04	1030NE		Rock	28.8	2	50.2	10.6	47.8	<0.05	1.1	0.109	0.382	2.9	6	93.3	4.2	225	32.2														
36	Ld107100301	RA05	1030NE		Rock	16.1	2	3.7	84.7	0.82	<0.05	13.2	0.481	0.86	3	128	1.3	55	125	203														
37	NO81101	RB001	1130SE		Rock	12.2	4	2.6	82.5	0.63	<0.05	8.5	0.362	0.92	1.9	93	0.9	114	132	149														
38	NO81101	RB002	1130SE		Rock	15.2	4	4.3	61	1.28	<0.05	14.9	0.692	0.7	3.6	121	2	146.5	50	240														
39	NO81202	RB003	1130SE		Rock	13.2	6	4.2	53	1.11	<0.05	9.9	0.582	0.96	3.2	116	1.5	270	57	196														
40	NO81202	RB004	1130SE		Rock	9.2	5	2.3	72.7	0.72	<0.05	8.1	0.402	0.35	2.2	68	0.8	96.4	45	119														
41	NO81207	RB005	1130SE		Rock	15.9	4	3.6	75.8	0.98	<0.05	9.5	0.478	1.09	2.5	127	2	230	73	153														
42	NO81207	RB006	1130SE		Rock	13	5	2.7	45	0.64	<0.05	9.6	0.368	0.69	1.6	101	1.1	201	109	143														
43	NO81306	RB007	1130SE		Rock	7.9	3	1.7	91	0.49	<0.05	6	0.28	0.26	1.2	62	0.5	81.9	73	90.1														
44	NO81306	RB008	1130SE		Rock	1.8	2	1.2	33	0.45	<0.05	4.8	0.097	0.42	1.2	10	0.6	15.1	5	60.9														
45	NO90501	RB009	1130NE		Rock	2.1	2	2	48	0.52	<0.05	3.1	0.109	0.46	1.5	10	0.8	12.9	6	53.8														
46	NO90501	RB010	1130NE		Rock	2.1	2	2	4																									

Appendix V-11 EPMA Dating Technique and the Result of Analytical Data

Analytical techniques of U-Th-total Pb electron microprobe age determination

The theoretical concepts of EPMA dating technique followed in this study and the equations for age computations are described in detail in Suzuki & Adachi (1991) and Montel et al. (1996) and Santosh et al. (2003).

Chemical analyses were made using an electron microprobe (JEOL JXA-8800) at the National Science Museum, Tokyo, Japan, with a 15 kV accelerating voltage, 0.5 μ A probe current (0.2 μ A for monazite), 2 μ m probe diameter and 200~300 seconds counting time for U, Th and Pb. PRZ corrections (modified ZAF) were applied for the analyses. U, Th and Pb standards were synthesized UO₂, ThO₂ and natural crocoite (PbCrO₄), respectively. Natural and synthesized minerals were used as standards for other elements. Seven elements (Si, Zr, Y, Hf, U, Th, Pb) for zircon and 14 elements (P, Si, La, Ce, Pr, Nd, Sm, Gd, Dy, Y, U, Th, Pb, Ca) for monazite were analysed. UM α , ThM α , PbM α lines were used in the U, Th and Pb analyses, respectively, and the spectral interferences of the ThM ζ , YL χ and ZrL γ lines with the PbM α line, and the ThM β line with the UM α line were corrected.

Age calibrations were performed by comparing data obtained from zircons and monazites by EPMA dating with those generated by the SIMS technique using the Sensitive High-mass Resolution Ion Microprobe (SHRIMP). The ages obtained from both techniques were found to be within error. The coincidence will support that both zircon and monazite have the same age in igneous rocks.

References

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**The result of EPMA dating analytical data ; 1030NE sheet(1)
(Samples from Basement Complex)**

Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)	Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)
Dh-02 (Monazite)	0.472	4.87	0.558	1914	16	RC012D (Zircon)	0.052	0.037	0.020	1962	239
	0.383	4.79	0.526	1924	17		0.094	0.018	0.034	2027	151
	0.037	4.15	0.363	1929	24		0.076	0.056	0.031	2034	165
	0.489	4.61	0.555	1957	16		0.050	0.064	0.023	2056	221
	0.239	5.17	0.524	1962	17		0.067	0.049	0.028	2077	187
	0.320	4.64	0.505	1964	18		0.040	0.056	0.019	2083	273
	0.508	4.46	0.552	1966	16		0.073	0.052	0.031	2106	173
	0.411	4.32	0.509	1968	18		0.064	0.043	0.027	2111	199
	0.198	3.83	0.397	1973	23		0.064	0.057	0.029	2161	191
	0.492	4.82	0.581	1978	16		0.053	0.064	0.027	2207	214
	0.452	4.70	0.558	1980	16		0.043	0.048	0.021	2223	271
	0.525	4.88	0.598	1980	15		0.053	0.044	0.025	2249	234
	0.184	2.81	0.306	1982	29		0.030	0.035	0.015	2266	381
	0.323	4.63	0.510	1983	18		0.035	0.029	0.017	2311	351
	0.354	4.61	0.519	1983	18		0.036	0.024	0.017	2313	352
	0.452	4.43	0.536	1983	17		0.044	0.020	0.020	2346	309
	0.545	4.97	0.615	1987	15		0.030	0.052	0.018	2375	348
	0.252	3.39	0.380	1988	24		0.036	0.051	0.021	2451	310
	0.350	3.15	0.392	1990	23		0.039	0.053	0.023	2480	290
	0.333	4.17	0.477	1995	19		0.040	0.048	0.024	2562	294
0.256	3.27	0.378	2024	24	0.046	0.021	0.015	1802	282		
0.156	2.62	0.287	2030	32	0.081	0.023	0.026	1810	168		
Dh-02 (Zircon)	0.119	0.000	0.037	1872	123	0.049	0.035	0.018	1896	253	
	0.086	0.020	0.028	1878	163	0.061	0.021	0.021	1901	220	
	0.052	0.088	0.024	1912	197	0.053	0.043	0.020	1906	230	
	0.128	0.006	0.043	1969	114	0.042	0.052	0.018	1971	266	
	0.071	0.000	0.023	1976	206	0.054	0.032	0.021	2012	237	
	0.064	0.049	0.025	1982	194	0.053	0.081	0.025	2020	200	
	0.112	0.000	0.039	2044	131	0.064	0.107	0.031	2021	161	
	0.076	0.000	0.027	2075	193	0.089	0.051	0.035	2023	146	
	0.087	0.036	0.034	2081	155	0.043	0.006	0.015	2032	333	
	0.067	0.063	0.030	2118	178	0.069	0.045	0.028	2054	185	
	0.147	0.000	0.053	2120	100	0.059	0.050	0.025	2068	207	
	0.089	0.045	0.038	2194	150	0.062	0.071	0.030	2159	186	
	0.121	0.000	0.046	2215	122	0.037	0.047	0.018	2161	303	
	0.061	0.078	0.032	2270	186	0.044	0.028	0.019	2170	289	
	0.055	0.037	0.026	2294	233	0.071	0.000	0.027	2181	208	
	0.097	0.067	0.046	2306	133	0.037	0.023	0.016	2183	343	
	0.058	0.072	0.031	2326	197	0.049	0.043	0.023	2229	249	
	RB020D (Monazite)	0.213	6.52	0.618	1923	14	0.040	0.037	0.019	2241	301
		0.308	5.79	0.590	1934	15	0.047	0.035	0.022	2266	267
		0.427	5.48	0.607	1948	15	0.043	0.056	0.023	2328	264
0.173		4.19	0.415	1950	21	0.046	0.061	0.025	2347	246	
0.235		4.87	0.494	1952	18	0.031	0.035	0.017	2432	376	
0.260		5.43	0.551	1954	16	0.067	0.057	0.025	1861	181	
0.094		2.18	0.218	1957	40	0.070	0.055	0.026	1881	176	
0.314		6.25	0.640	1958	14	0.079	0.015	0.026	1893	179	
0.240		4.10	0.432	1962	21	0.074	0.059	0.028	1893	166	
0.364		5.09	0.558	1965	16	0.070	0.101	0.030	1903	154	
0.195		3.53	0.369	1965	24	0.108	0.085	0.041	1911	114	
0.215		4.34	0.447	1972	20	0.047	0.078	0.022	1917	218	
0.241		5.19	0.530	1975	17	0.065	0.075	0.027	1917	174	
0.369		5.04	0.560	1978	16	0.071	0.058	0.027	1918	173	
0.215		4.38	0.454	1987	20	0.096	0.170	0.045	1936	106	
0.204		5.50	0.550	1991	17	0.109	0.000	0.035	1946	134	
0.606		4.66	0.614	2002	15	0.091	0.014	0.031	1949	157	
0.162		3.86	0.399	2023	23	0.062	0.058	0.025	1965	193	
RB020D (Zircon)		0.053	0.035	0.023	2164	240	0.055	0.145	0.030	1968	160
		0.037	0.021	0.016	2199	347	0.109	0.068	0.042	1971	117
	0.042	0.038	0.020	2249	288	0.067	0.058	0.027	1982	182	
	0.039	0.024	0.018	2288	329	0.061	0.067	0.026	1984	188	
	0.035	0.043	0.019	2341	326	0.071	0.069	0.030	2017	167	
	0.051	0.058	0.027	2342	231	0.071	0.052	0.029	2034	177	
	0.052	0.018	0.024	2397	269	0.049	0.060	0.022	2054	231	
	0.070	0.006	0.036	2712	216	0.057	0.084	0.027	2058	189	
	0.030	0.029	0.019	2739	410	0.062	0.083	0.029	2066	178	
	0.043	0.032	0.028	2833	305	0.071	0.055	0.030	2073	176	
	0.113	0.020	0.066	2903	135	0.111	0.121	0.050	2076	106	
						0.064	0.046	0.027	2078	196	
						0.067	0.034	0.027	2081	196	
						0.063	0.052	0.027	2085	195	
						0.076	0.042	0.031	2100	172	
						0.074	0.084	0.035	2125	157	
						0.052	0.034	0.022	2126	244	
						0.077	0.098	0.038	2151	147	
						0.089	0.092	0.041	2152	134	
						0.056	0.117	0.032	2162	173	
					0.078	0.060	0.035	2172	161		
					0.070	0.069	0.034	2211	171		
					0.062	0.080	0.032	2220	182		
					0.040	0.064	0.022	2231	262		
					0.043	0.062	0.023	2267	256		
					0.066	0.039	0.033	2433	200		

**The result of EPMA dating analytical data ; 1030NE sheet(2)
(Samples from Muva Supergroup)**

Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)	
No.1 (Zircon)	0.074	0.059	0.027	1859	166	
	0.074	0.074	0.029	1870	158	
	0.047	0.071	0.020	1871	223	
	0.073	0.000	0.023	1888	200	
	0.076	0.010	0.025	1893	188	
	0.072	0.006	0.024	1963	201	
	0.102	0.010	0.036	2024	142	
	0.075	0.007	0.026	2035	193	
	0.060	0.006	0.022	2076	241	
	0.082	0.000	0.029	2077	179	
	0.073	0.000	0.027	2168	202	
	0.077	0.000	0.029	2168	192	
	0.055	0.027	0.024	2197	240	
	0.065	0.047	0.030	2224	195	
	0.064	0.032	0.029	2314	208	
	0.070	0.007	0.032	2463	212	
	0.058	0.080	0.036	2526	196	
	0.065	0.010	0.032	2609	228	
	0.059	0.017	0.035	2911	251	
	No.2 (Monazite)	0.271	3.42	0.400	2039	23
2.320		2.93	1.063	2044	9	
No.2 (Zircon)	0.070	0.000	0.021	1866	209	
	0.070	0.057	0.027	1902	175	
	0.079	0.020	0.027	1922	177	
	0.056	0.022	0.021	2047	239	
	0.060	0.033	0.025	2126	217	
	0.084	0.057	0.036	2129	152	
	0.083	0.026	0.033	2142	166	
	0.056	0.000	0.021	2144	263	
	0.066	0.011	0.027	2265	219	
	0.071	0.027	0.032	2345	193	
	0.062	0.026	0.030	2440	220	
	0.051	0.075	0.032	2550	218	
	0.079	0.008	0.038	2590	189	
	0.082	0.000	0.042	2723	186	
	0.065	0.000	0.034	2745	235	
	0.053	0.011	0.029	2794	280	
	0.037	0.024	0.029	3257	375	
	0.062	0.060	0.059	3576	224	
	0.045	0.041	0.044	3634	309	
	No.3-2 (Zircon)	0.069	0.067	0.026	1796	169
0.069		0.022	0.024	1893	196	
0.059		0.027	0.023	2026	223	
0.075		0.000	0.026	2051	196	
0.076		0.000	0.027	2068	193	
0.064		0.000	0.023	2077	230	
0.077		0.038	0.031	2091	172	
0.058		0.057	0.026	2103	206	
0.078		0.041	0.032	2103	169	
0.069		0.036	0.028	2117	190	
0.067		0.012	0.025	2127	213	
0.063		0.000	0.023	2131	234	
0.066		0.024	0.027	2179	206	
0.055		0.028	0.024	2224	240	
0.068		0.008	0.027	2248	214	
0.051		0.034	0.027	2522	255	
0.081		0.011	0.044	2787	187	
No.4 (Zircon)		0.050	0.113	0.025	1862	184
		0.067	0.029	0.023	1880	197
		0.071	0.138	0.033	1885	138
	0.055	0.069	0.023	1924	201	
	0.065	0.025	0.024	1983	206	
	0.078	0.009	0.027	1992	185	
	0.071	0.023	0.026	2000	191	
	0.051	0.029	0.021	2078	252	
	0.067	0.039	0.028	2103	193	
	0.065	0.000	0.025	2229	228	
	0.065	0.026	0.030	2332	210	
	0.057	0.000	0.024	2348	261	
	0.064	0.000	0.033	2746	239	

Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)	
No.6 (Monazite)	0.045	0.525	0.030	1028	138	
	0.063	0.438	0.029	1046	143	
	0.028	1.47	0.072	1071	60	
	0.002	2.14	0.100	1079	44	
	0.085	0.178	0.022	1100	198	
	0.063	0.479	0.035	1174	134	
	0.026	0.456	0.028	1188	172	
	0.020	0.594	0.035	1213	142	
	0.022	0.602	0.036	1237	139	
	No.6 (Zircon)	0.068	0.129	0.029	1739	144
		0.075	0.125	0.032	1786	137
		0.079	0.108	0.032	1790	137
		0.053	0.074	0.022	1817	202
0.076		0.020	0.024	1843	182	
0.055		0.046	0.020	1849	220	
0.046		0.069	0.024	2199	233	
0.046		0.032	0.022	2338	277	
0.032		0.028	0.023	3041	403	
RB015D (Zircon)		0.034	0.08	0.017	1871	262
	0.055	0.11	0.027	1906	176	
	0.092	0.01	0.031	1940	156	
	0.034	0.05	0.016	2004	319	
	0.049	0.02	0.018	2033	279	
	0.057	0.02	0.022	2051	233	
	0.034	0.04	0.016	2185	340	
	0.041	0.04	0.019	2206	294	
	0.040	0.02	0.018	2266	324	
	0.029	0.03	0.015	2352	403	
	0.033	0.04	0.018	2363	341	
	0.031	0.07	0.021	2372	303	
	0.046	0.03	0.023	2399	279	
	0.024	0.06	0.017	2456	395	
	0.051	0.03	0.027	2530	260	
	0.041	0.01	0.020	2551	353	
	0.033	0.02	0.019	2738	413	
	0.028	0.03	0.019	2847	437	
	0.024	0.03	0.018	2905	479	
	0.024	0.02	0.016	3018	575	
0.039	0.02	0.027	3090	367		
0.033	0.03	0.026	3160	392		

**The result of EPMA dating analytical data ; 1030SE sheet(1)
(Samples from Basement Complex)**

Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)
RA006D (Monazite)	0.000	2.19	0.167	1753	45
	0.208	5.06	0.472	1844	18
	0.016	6.79	0.564	1879	15
	0.004	7.33	0.606	1884	14
	0.023	7.46	0.627	1894	14
	0.024	7.45	0.627	1896	14
	0.003	8.92	0.743	1896	12
	0.010	8.42	0.705	1902	13
	0.207	6.98	0.648	1903	14
	0.026	8.10	0.684	1904	13
	0.120	7.05	0.627	1904	14
	0.230	7.02	0.659	1906	13
	0.111	6.70	0.595	1906	15
	0.000	11.28	0.941	1907	10
	0.000	6.56	0.548	1913	16
	0.211	7.76	0.718	1913	12
	0.008	6.65	0.561	1914	16
	0.021	6.59	0.560	1915	16
	0.259	7.26	0.694	1919	13
	0.030	5.89	0.507	1924	17
	0.011	7.43	0.631	1925	14
	0.257	6.85	0.661	1926	13
	0.200	6.85	0.643	1926	14
	0.067	7.01	0.614	1926	14
	0.022	7.39	0.632	1926	14
	0.137	7.22	0.654	1927	14
	0.254	7.03	0.676	1927	13
	0.182	6.85	0.639	1931	14
	0.240	7.24	0.691	1933	13
	0.172	7.56	0.697	1935	13
	0.173	7.07	0.656	1936	14
	0.000	7.05	0.599	1936	15
	0.297	7.45	0.729	1937	12
	0.000	6.71	0.569	1937	16
	0.053	6.70	0.587	1938	15
	0.028	8.94	0.769	1938	12
	0.095	6.88	0.616	1939	15
	0.103	2.56	0.251	1939	34
	0.295	7.02	0.693	1940	13
	0.091	5.72	0.517	1942	17
	0.022	7.17	0.619	1943	15
	0.251	7.28	0.703	1946	13
	0.020	7.60	0.656	1947	14
	0.224	7.43	0.708	1949	13
	0.327	7.55	0.752	1949	12
	0.145	6.88	0.636	1950	14
	0.661	4.56	0.605	1950	15
	0.000	7.53	0.646	1954	14
	0.032	6.87	0.600	1955	15
	0.189	6.53	0.623	1958	15
	0.316	6.90	0.697	1959	13
	0.237	6.61	0.649	1967	14
	0.296	5.40	0.565	1970	16
	0.915	5.61	0.789	1975	12
0.844	5.45	0.753	1979	12	
0.188	4.83	0.486	1993	19	
0.571	5.13	0.640	1993	14	
0.660	4.69	0.632	1995	15	

Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)
RA006D (Zircon)	0.062	0.05	0.023	1850	199
	0.085	0.01	0.027	1876	170
	0.107	0.00	0.033	1890	137
	0.055	0.04	0.021	1892	223
	0.075	0.02	0.025	1906	187
	0.058	0.03	0.022	1966	223
	0.133	0.00	0.044	1977	110
	0.071	0.10	0.032	1992	153
	0.093	0.00	0.031	2014	158
	0.056	0.04	0.023	2023	224
	0.064	0.01	0.023	2040	222
	0.039	0.05	0.018	2043	291
	0.087	0.11	0.040	2053	128
	0.108	0.01	0.038	2064	135
	0.100	0.00	0.035	2081	147
	0.089	0.00	0.031	2083	165
	0.073	0.06	0.032	2094	166
	0.115	0.00	0.041	2099	128
	0.065	0.03	0.026	2107	203
	0.063	0.05	0.027	2116	199
	0.052	0.07	0.026	2123	211
	0.055	0.00	0.020	2125	268
	0.108	0.01	0.040	2131	135
	0.071	0.04	0.030	2153	184
	0.090	0.05	0.038	2165	145
	0.069	0.00	0.026	2168	214
	0.059	0.01	0.023	2178	244
	0.081	0.00	0.030	2186	182
	0.056	0.07	0.028	2199	202
	0.065	0.00	0.025	2204	227
	0.056	0.05	0.027	2273	223
	0.055	0.04	0.026	2286	227
	0.052	0.04	0.026	2307	238
	0.038	0.04	0.020	2369	310
	0.040	0.04	0.021	2387	300
	0.080	0.10	0.047	2494	148
	0.072	0.08	0.042	2517	167
	0.095	0.07	0.053	2584	138
	0.085	0.06	0.052	2753	155
	0.071	0.04	0.044	2828	193
	0.063	0.05	0.042	2940	214

**The result of EPMA dating analytical data ; 1030SE sheet(2)
(Samples from Katanga Supergroup)**

Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)
Dh-01 (Monazite)	0.000	0.491	0.019	926	190
	0.002	0.437	0.021	1089	210
	0.001	0.923	0.044	1111	101
	0.361	2.50	0.322	1904	26
Dh-01 (Zircon)	0.538	0.034	0.051	648	27
	0.107	0.138	0.022	1022	101
	0.062	0.168	0.018	1113	134
	0.095	0.092	0.022	1198	122
	0.087	0.094	0.021	1244	130
	0.093	0.093	0.023	1276	124
	0.067	0.048	0.019	1478	183
	0.068	0.045	0.026	1978	186
	0.078	0.044	0.034	2212	168
	0.085	0.028	0.037	2283	163
	0.061	0.053	0.030	2295	203
	0.050	0.072	0.029	2408	221
	0.046	0.029	0.023	2424	282
	0.045	0.000	0.020	2484	333

Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)	
DI-01 (Monazite)	0.024	1.055	0.030	630	82	
	0.218	2.91	0.104	671	26	
	0.000	0.964	0.029	715	96	
	0.301	3.41	0.135	717	21	
	0.007	1.49	0.047	728	61	
	0.000	0.824	0.026	734	113	
	0.005	0.678	0.023	779	134	
	0.007	0.664	0.023	791	135	
	0.000	0.622	0.028	1033	150	
	0.000	0.512	0.023	1042	182	
	DI-01 (Zircon)	0.112	0.016	0.013	761	128
		0.096	0.059	0.013	775	132
		0.095	0.061	0.013	794	132
		0.081	0.050	0.013	918	155
0.086		0.023	0.014	988	159	
0.090		0.000	0.013	1006	164	
0.093		0.010	0.016	1141	154	
0.092		0.062	0.020	1196	135	
0.072		0.039	0.015	1218	177	
0.088		0.014	0.017	1223	160	
0.074		0.043	0.017	1292	171	
0.091		0.000	0.019	1369	160	
0.068		0.010	0.015	1376	208	
0.054		0.052	0.015	1444	215	
0.060		0.058	0.018	1515	194	
0.074		0.038	0.021	1564	174	
0.064		0.022	0.018	1570	208	
0.061		0.000	0.016	1668	239	
0.051	0.027	0.017	1825	252		
0.047	0.032	0.020	2150	268		

**The result of EPMA dating analytical data ; 1130NE and 1130SE sheet
(Samples from Katanga Supergroup)**

Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)
RC011D (Zircon)	0.082	0.094	0.017	1051	136
	0.078	0.059	0.016	1101	156
	0.092	0.106	0.021	1136	120
	0.055	0.034	0.013	1270	227
	0.057	0.036	0.013	1277	218
	0.049	0.073	0.016	1451	211
	0.045	0.019	0.012	1577	294
	0.044	0.010	0.019	2337	324
RB002D (Zircon)	0.020	0.007	0.010	2619	705
	0.071	0.029	0.013	1061	185
	0.061	0.034	0.011	1062	208
	0.074	0.028	0.017	1365	179
	0.037	0.030	0.020	2501	338

Sample No. (Mineral)	UO ₂ (%)	ThO ₂ (%)	PbO (%)	Age (Ma)	error (1σ)	
RC003D (Monazite)	0.000	0.993	0.022	522	93	
	0.000	1.37	0.031	530	68	
	0.001	1.20	0.028	541	77	
	0.000	0.65	0.015	548	144	
	0.009	1.24	0.030	562	73	
	0.163	6.96	0.613	1848	14	
	0.000	3.22	0.263	1865	31	
	0.445	5.63	0.603	1883	14	
	0.199	6.27	0.587	1905	15	
	0.166	4.38	0.421	1915	21	
	0.450	4.84	0.552	1924	16	
	0.170	4.35	0.422	1927	21	
	0.519	6.22	0.694	1933	13	
	0.162	4.33	0.427	1964	21	
	0.033	4.54	0.402	1965	22	
	RC003D (Zircon)	0.055	0.010	0.019	1942	257
		0.063	0.008	0.021	1943	227
		0.079	0.000	0.026	1954	185
		0.065	0.046	0.025	1957	193
		0.075	0.010	0.026	1990	191
		0.038	0.074	0.020	2022	256
		0.066	0.101	0.032	2049	162
		0.085	0.012	0.031	2060	169
		0.051	0.000	0.018	2084	288
		0.076	0.074	0.035	2145	157
		0.063	0.083	0.032	2175	178
		0.047	0.060	0.023	2184	240
		0.037	0.021	0.016	2199	347
0.052		0.010	0.021	2228	275	
0.035		0.023	0.016	2264	361	
0.042		0.017	0.018	2268	326	
0.038		0.000	0.015	2281	390	
0.057		0.016	0.026	2395	249	
0.065		0.019	0.030	2404	218	
0.035		0.019	0.018	2525	386	
0.044		0.024	0.024	2594	303	
0.060		0.044	0.034	2629	217	
0.041		0.026	0.025	2768	324	
0.041		0.009	0.023	2798	361	
0.029		0.026	0.019	2824	432	
0.041		0.051	0.029	2865	293	
0.043		0.029	0.029	2942	312	
0.019		0.038	0.021	3539	578	

Appendix V-12 List of Collected Stream Sediments 1/5

Ser	ID	Sampled geologist	Sampled date	stream system	Coordinate (Arc 1960)	Alt	Stream/Soil	Stream width (m)	Nature of stream	Bank height (m)	Dominant stream sediment	Contamination at sample locality	Type of contamination	Obviously heavy mineral trail	Organic matter in stream sediment (%)	Rock information	Remark
				Northing		Easting		Alt									
1	1030 B1 - 1	IS	2007/9/11	Kasanehi kenozo	8891283	2765967	1340	stream	flowing	<1m	fine	no	none	no	<60%	exposed rock	swamp grass, open canopy granite outcrop, swamps grass plenty of organic matter
2	1030 B1 - 2	IS	2007/9/11	Kabwe	8890854	2728233	1331	stream	flowing	<1m	sand	no	none	no	>60%	none	open canopy, much grass in the stream
3	1030 B1 - 3	IS	2007/9/10	Chipembembe	8886953	278564	1307	stream	flowing	<1m	sand	no	none	no	<30%	none	open canopy, not much of grass in the stream
4	1030 B1 - 4	IS	2007/9/12	Filamba	8886097	273485	1309	stream	flowing	<1m	fine	no	none	no	<60%	none	open canopy, much grass in the stream
5	1030 B1 - 5	IS	2007/9/12	Chisawa	8889330	272386	1306	stream	flowing	<1m	fine	no	none	no	<30%	exposed rock	open canopy, not much of grass in the stream
6	1030 B1 - 6	IS	2007/9/10	Chitwa	8885434	279034	1308	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	open canopy, not much of grass in the stream
7	1030 B1 - 7	IS	2007/9/10	Chitwa	8881774	279872	1308	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	open canopy, not much of grass in the stream
8	1030 B1 - 8	IS	2007/9/10	Chitwa	8881364	279043	1308	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	open canopy, not much of grass in the stream
9	1030 B1 - 9	IS	2007/9/10	Chitwa	8881364	279043	1308	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	open canopy, not much of grass in the stream
10	1030 B1 - 10	IS	2007/9/10	Chitwa	8882424	278570	1299	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	open canopy, not much of grass in the stream
11	1030 B1 - 11	IS	2007/9/10	Chitwa	8882424	278570	1299	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	open canopy, not much of grass in the stream
12	1030 B1 - 12	IS	2007/9/12	Tribrary of Lukulu(Luapula)	8882321	273270	1287	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Very tall trees (about 15m tall) have formed a canopy at this location.
13	1030 B1 - 13	IS	2007/9/12	Kampelembe	8892282	274663	1353	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	swampy grass, partly closed canopy
14	1030 B1 - 14	IS	2007/9/12	Kampelembe	8892967	273038	1351	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	grass in the stream is not rich, closed canopy
15	1030 B1 - 15	IS	2007/9/12	Kampelembe	8890675	240496	1304	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	few swamps grass, closed canopy
16	1030 B1 - 16	IS	2007/9/12	Kampelembe	8890675	240496	1304	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	closed canopy, dense trees, few grasses in the stream
17	1030 B1 - 17	IS	2007/9/12	Kampelembe	8885410	244448	1299	stream	flowing	<1m	fine	no	none	no	<60%	exposed rock	Dambo with grass (<15m)
18	1030 B1 - 18	IS	2007/9/13	Fionge	8877382	245792	1296	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Reeds along stream
19	1030 B1 - 19	IS	2007/9/13	Fionge	8877382	245792	1296	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Reeds along stream
20	1030 B1 - 20	EK	2007/9/14	Mubanda	8871932	249743	1279	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Reeds along stream
21	1030 B1 - 21	EK	2007/9/14	Mubanda	8871932	249743	1279	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Reeds along stream
22	1030 B1 - 22	IS	2007/9/11	Kamulubawe	8861920	244549	1281	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Reeds along stream
23	1030 B1 - 23	IS	2007/9/11	Fionzo	8882547	242452	1277	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Reeds along stream
24	1030 B1 - 24	IS	2007/9/11	Fionzo	8882547	242452	1277	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Reeds along stream
25	1030 B1 - 25	IS	2007/9/12	Miangwa	8884877	273026	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Fresh green weeds are present in the stream at this location
26	1030 B1 - 26	IS	2007/9/12	Miangwa	8884877	273026	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Fresh green weeds are present in the stream at this location
27	1030 B1 - 27	IS	2007/9/12	Miangwa	8885246	246291	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	A good stretch of the stream (both up- and down- stream) at this location has a thick canopy of tall trees (> about 10m)
28	1030 B1 - 28	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
29	1030 B1 - 29	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
30	1030 B1 - 30	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
31	1030 B1 - 31	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
32	1030 B1 - 32	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
33	1030 B1 - 33	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
34	1030 B1 - 34	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
35	1030 B1 - 35	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
36	1030 B1 - 36	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
37	1030 B1 - 37	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
38	1030 B1 - 38	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
39	1030 B1 - 39	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
40	1030 B1 - 40	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
41	1030 B1 - 41	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
42	1030 B1 - 42	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
43	1030 B1 - 43	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
44	1030 B1 - 44	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
45	1030 B1 - 45	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
46	1030 B1 - 46	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
47	1030 B1 - 47	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
48	1030 B1 - 48	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
49	1030 B1 - 49	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
50	1030 B1 - 50	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
51	1030 B1 - 51	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
52	1030 B1 - 52	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
53	1030 B1 - 53	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
54	1030 B1 - 54	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
55	1030 B1 - 55	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
56	1030 B1 - 56	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
57	1030 B1 - 57	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
58	1030 B1 - 58	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
59	1030 B1 - 59	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
60	1030 B1 - 60	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
61	1030 B1 - 61	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
62	1030 B1 - 62	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
63	1030 B1 - 63	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
64	1030 B1 - 64	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
65	1030 B1 - 65	IS	2007/9/12	Miangwa	8890352	240566	1298	stream	flowing	<1m	sand	no	none	no	<30%	exposed rock	Grass of 1.5m
66	1030 B1 - 66	IS	2007/9/12	Miangwa													

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Ser	ID	Sampled geologist	Sampled date	stream system	Coordinate (Arc 1960)	Alt	Stream/Soil	Stream width (m)	Nature of stream	Bank height (m)	Dominant stream sediment	Contamination at sample locality	Type of contamination	Obviously heavy mineral trail	Organic matter in stream sediment (%)	Rock information	Remark
				Northing		Easting		Alt									
250	030 D2 - 19	EK	2007/10/12	Muboshi	8817648	2585871	1215	stream	>10m	<1m	yet to be sieved	yes	domestic	no	<30%	none	
251	030 D2 - 20	EK	2007/10/15	Muboshi	8819442	2585871	1196	stream	5-10m	<1m	yes	no	domestic	no	<30%	none	The stream flows slowly.
252	030 D2 - 21	EK	2007/10/15	Muboshi	8811107	2645444	1195	dambo	>10m	<1m	yet to be sieved	no	none	no	<60%	none	
253	030 D2 - 22	EK	2007/10/19	Muboshi	8811714	2668119	1217	dambo	>10m	<1m	yet to be sieved	no	none	no	<60%	none	
254	030 D2 - 23	EK	2007/10/26	Munushi	8811595	2711055	1209	stream	>10m	<1m	yet to be sieved	no	none	no	<30%	none	
255	030 D2 - 24	EK	2007/10/26	Munushi	8814155	2711055	1218	stream	>10m	<1m	yet to be sieved	no	none	no	<30%	none	
256	030 D2 - 25	EK	2007/10/26	Munushi	8816329	2714786	1216	stream	>10m	<1m	yet to be sieved	no	none	no	<30%	none	
257	030 D2 - 26	EK	2007/10/27	Munushi	8818456	2698992	1271	stream	>10m	<1m	yet to be sieved	no	none	no	<30%	none	
258	030 D2 - 27	EK	2007/10/27	Tributary of Munushi	8818456	2698992	1271	dambo	>10m	<1m	yet to be sieved	no	none	no	<30%	none	
259	030 D2 - 28	EK	2007/10/27	Tributary of Munushi	8820768	2722724	1219	dambo	>10m	<1m	yet to be sieved	no	none	no	<30%	none	The stream flows slowly at this location.
260	030 D2 - 29	EK	2007/10/27	Munushi	8820489	2742311	1225	dambo	>10m	<1m	yet to be sieved	no	none	no	<30%	none	
261	030 D2 - 30	EK	2007/10/27	Munushi	8811381	2762622	1212	stream	>10m	<1m	yet to be sieved	no	none	no	<30%	none	
262	030 D2 - 31	EK	2007/10/31	Munushi	8811317	2747963	1216	dambo	>10m	<1m	yet to be sieved	no	none	no	<60%	none	There is a short green grass in the stream bed.
263	030 D2 - 32	EK	2007/11/1	Munushi	8818097	2758663	1215	dambo	>10m	<1m	yet to be sieved	no	none	no	<60%	none	The soil color is dark grey.
264	030 D2 - 33	EK	2007/11/1	Munushi	8811904	2754677	1222	dambo	>10m	<1m	yet to be sieved	no	none	no	<60%	none	The soil color is grey.
265	030 D2 - 34	EK	2007/11/1	Munushi	8820125	2788877	1222	stream	>10m	<1m	yet to be sieved	no	none	no	<30%	none	
266	030 D2 - 35	EK	2007/11/1	Munushi	8814716	2812417	1213	dambo	>10m	<1m	yet to be sieved	no	none	no	<30%	none	
267	030 D2 - 36	EK	2007/10/29	Munushi	8829486	2800422	1225	stream	1-5m	1-5m	yet to be sieved	yes	domestic	no	<30%	none	some grass in the stream
268	030 D2 - 37	EK	2007/10/11	Millina	8833810	2729113	1221	stream	<1m	<1m	yes	no	none	no	<30%	none	river bottom is white sand material
269	030 D2 - 38	EK	2007/10/16	Munushi	8834150	2709819	1221	stream	<1m	<1m	yes	no	none	no	<30%	none	river bottom is white sand material
270	030 D2 - 39	EK	2007/10/16	Munushi	8834150	2709819	1221	stream	1-5m	<1m	yes	no	none	no	<30%	none	river bottom is white sand material
271	030 D2 - 40	EK	2007/10/16	Munushi	8832213	2697622	1213	stream	<1m	<1m	yes	no	none	no	<30%	none	river bottom is white sand material
272	030 D2 - 41	EK	2007/10/16	Munushi	8836388	2698592	1227	stream	<1m	<1m	yes	no	none	no	<30%	none	river bottom is white sand material
273	030 D2 - 42	EK	2007/10/17	Munushi	8836388	2698592	1227	stream	1-5m	<1m	yes	no	none	no	<30%	none	river bottom is white sand material
274	030 D2 - 43	EK	2007/10/12	Munushi	8816162	2823008	1224	dambo	>10m	<1m	yet to be sieved	yes	domestic	no	<60%	none	Dambo bed wet but without surface water.
275	030 D2 - 44	APD	2007/10/23	Tributary of Muboshi	8810127	2485653	1109	dambo	>10m	<1m	yes	no	none	no	<30%	none	
276	030 D2 - 45	APD	2007/10/24	Munushi	8804950	2498119		dambo	>10m	<1m	yes	no	none	no	<30%	none	
277	030 D2 - 46	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
278	030 D2 - 47	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
279	030 D2 - 48	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
280	030 D2 - 49	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
281	030 D2 - 50	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
282	030 D2 - 51	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
283	030 D2 - 52	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
284	030 D2 - 53	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
285	030 D2 - 54	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
286	030 D2 - 55	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
287	030 D2 - 56	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
288	030 D2 - 57	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
289	030 D2 - 58	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
290	030 D2 - 59	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
291	030 D2 - 60	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
292	030 D2 - 61	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
293	030 D2 - 62	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
294	030 D2 - 63	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
295	030 D2 - 64	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
296	030 D2 - 65	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
297	030 D2 - 66	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
298	030 D2 - 67	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
299	030 D2 - 68	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
300	030 D2 - 69	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
301	030 D2 - 70	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
302	030 D2 - 71	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
303	030 D2 - 72	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
304	030 D2 - 73	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
305	030 D2 - 74	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
306	030 D2 - 75	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
307	030 D2 - 76	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
308	030 D2 - 77	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
309	030 D2 - 78	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
310	030 D2 - 79	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
311	030 D2 - 80	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
312	030 D2 - 81	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
313	030 D2 - 82	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
314	030 D2 - 83	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
315	030 D2 - 84	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
316	030 D2 - 85	APD	2007/10/23	Bubenshi	8805771	2489822		dambo	>10m	<1m	yes	no	none	no	<30%	none	
317	030 D2 - 86	MM	2007/10/26	Munushi	8802289	2681739	1095	dambo	>10m	<1m	yes</						

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Ser	ID	Sampled geologist	Sampled date	stream system	Coordinate (Arc: 1960)		Stream/Soil	Stream width (m)	Nature of stream	Bank height (m)	Dominant stream sediment	Contamination at sample locality	Type of contamination	Obviously heavy mineral trail	Organic matter in stream sediment (%)	Rock information	Remark
					Northing	Easting											
333	030 D4 - 01	EK	2007/10/31		8810127	2749185	1213	>10m	stagnant	<1m	yet to be sieved	yes	domestic	no	<60%	none	A footpath crosses the stream at this location.
334	030 D4 - 02	EK	2007/10/31		8810073	2748528	1209	>10m	flowing	<1m	yet to be sieved	no	none	no	<60%	none	
335	030 D4 - 03	EK	2007/10/31	Tributary of Mununshi	8806508	275407	1203	>10m	flowing	<1m	yet to be sieved	no	none	no	<30%	none	There is a short green grass in the stream bed.
336	030 D4 - 04	EK	2007/10/18	Mununshi	8800211	274560	1202	1-5m	flowing	<1m	yet to be sieved	no	none	no	<30%	none	
337	030 D4 - 05	EK	2007/10/19	Tributary of Muboshi	8809223	264673	1207	>10m	dry	<1m	yet to be sieved	no	none	no	<60%	none	
338	030 D4 - 06	EK	2007/10/30		8805742	270072	1206	>10m	dry	<1m	yet to be sieved	no	none	no	<60%	none	The soil color is dark grey.
339	030 D4 - 07	EK	2007/10/26	Mununshi	8809228	272296	1201	>10m	flowing	<1m	yet to be sieved	no	none	no	<60%	none	The soil color is dark grey.
340	030 D4 - 10	EK	2007/11/7	Lehitlwe	8801061	278500	1206	>10m	dry	<1m	yet to be sieved	no	none	no	<60%	none	The soil color is dark grey.
341	030 D4 - 11	EK	2007/11/7	Lehitlwe	8797933	276878	1199	>10m	stagnant	<1m	yet to be sieved	no	none	no	<60%	none	The soil color is grey.
342	030 D4 - 12	EK	2007/11/7	Tributary of Kama	8797953	270548	1189	>10m	stagnant	1-5m	yet to be sieved	no	none	no	<60%	none	The soil color is dark grey.
343	030 D4 - 13	EK	2007/11/7	Kama	8804681	270348	1188	>10m	flowing	<1m	yet to be sieved	no	none	no	<30%	none	
344	030 D4 - 14	EK	2007/11/11	Mununshi	8804415	272002	1184	>10m	flowing	<1m	yet to be sieved	no	none	no	<30%	none	The soil color is grey.
345	030 D4 - 15	EK	2007/11/11	Tributary of Mununshi	8804415	272002	1184	>10m	dry	<1m	yet to be sieved	no	none	no	<30%	none	The soil color is grey.

Appendix 13 Result of Stream Sediments Geochemistry 1/5

Site	ID	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Ga	Ge	Hf	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S	Sb	Sc	Se	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr	Au		
11030 B1-1		0.03	0.86	1.3	130	0.57	0.13	0.02	-0.02	32.9	1.2	5	1.74	3	0.13	2.13	0.09	0.39	15.7	3.8	0.01	68	0.34	0.03	0.32	0.04	0.08	1.0	7.0	20	-0.002	0.01	0.09	1.4	0.7	8.4	0.92	0.05	8	0.103	0.14	1.5	4	1.5	8.4	9	68.8	<0.001		
21030 B1-2		0.03	2.07	0.8	240	2.66	0.17	0.02	0.02	27.1	7.4	7	2.78	5.3	0.36	4.52	0.05	2.4	0.07	17.8	9.6	2.9	0.02	136	0.44	0.06	10.9	5.7	130	11.7	52.1	0.07	2.9	2	1.1	15.7	2.18	0.148	0.36	1.6	10	1.3	8.3	21	78.8	<0.001				
31030 B1-3		0.03	0.76	0.4	100	0.46	0.13	0.02	0.02	36.6	0.5	3	0.76	2.4	0.14	2.72	0.05	0.06	33.9	3.9	0.01	47	0.32	0.03	0.31	0.04	0.08	1.0	4.6	13.6	-0.002	0.01	0.07	1.2	0.5	6.8	0.54	0.05	2.7	0.13	0.18	6	0.7	3.2	13	75.3	<0.001			
41030 B1-4		0.01	0.64	0.3	130	0.92	0.11	0.02	0.03	7.3	0.4	3	0.64	1.7	0.18	1.83	-0.05	2	0.07	33.9	2.7	0.01	162	0.32	0.03	0.34	0.04	0.08	1.2	4.0	4.2	18.2	-0.002	0.01	0.08	1.2	0.5	6.8	0.52	0.05	2.4	0.14	0.11	9	0.8	3.3	16	70.6	<0.001	
51030 B1-5		0.01	0.84	0.2	20	0.33	0.01	-0.02	0.02	56.4	3	8	1.92	3.1	0.21	1.4	-0.05	2.6	0.005	0.07	10.2	2.7	0.01	162	0.32	0.03	0.34	0.04	0.08	1.2	4.0	4.2	18.2	-0.002	0.01	0.08	1.2	0.5	6.8	0.52	0.05	2.4	0.14	0.11	9	0.8	3.3	16	70.6	<0.001
61030 B1-6		0.01	0.31	0.2	70	0.63	0.08	0.01	-0.02	56.4	3	8	1.92	3.1	0.21	1.4	-0.05	2.6	0.005	0.07	10.2	2.7	0.01	162	0.32	0.03	0.34	0.04	0.08	1.2	4.0	4.2	18.2	-0.002	0.01	0.08	1.2	0.5	6.8	0.52	0.05	2.4	0.14	0.11	9	0.8	3.3	16	70.6	<0.001
71030 B1-7		0.01	0.65	0.2	140	0.23	0.11	0.02	-0.02	47.2	0.7	4	0.48	1.7	0.29	2.01	0.08	3.1	0.02	33.3	0.03	1.9	0.01	78	0.25	0.08	0.49	1.2	50	8.4	22.5	-0.002	0.01	0.05	1.1	0.4	15.8	0.33	0.05	1.2	5	0.5	5	16	84.8	<0.001				
81030 B1-8		0.01	0.87	0.2	240	0.23	0.11	0.02	-0.02	31.8	0.7	4	0.48	1.7	0.29	2.01	0.08	3.1	0.02	33.3	0.03	1.9	0.01	78	0.25	0.08	0.49	1.2	50	8.4	22.5	-0.002	0.01	0.05	1.1	0.4	15.8	0.33	0.05	1.2	5	0.5	5	16	84.8	<0.001				
91030 B1-9		0.02	0.63	0.2	40	0.64	0.07	0.01	-0.02	22.1	1.3	7	0.85	7.4	0.08	1.5	-0.05	1.5	0.007	10.9	4.6	0.01	87	0.16	0.01	0.33	0.04	3.0	4.2	7.4	-0.002	0.01	0.05	1.3	0.4	2.4	0.23	0.05	0.68	0.08	1.2	4	0.5	4.4	6	87.8	<0.001			
101030 B1-10		0.01	0.35	0.2	30	0.25	0.19	0.02	-0.02	22.1	1.3	7	0.85	7.4	0.08	1.5	-0.05	1.5	0.007	10.9	4.6	0.01	87	0.16	0.01	0.33	0.04	3.0	4.2	7.4	-0.002	0.01	0.05	1.3	0.4	2.4	0.23	0.05	0.68	0.08	1.2	4	0.5	4.4	6	87.8	<0.001			
111030 B1-11		0.02	1.94	0.3	120	0.99	0.02	0.02	48.5	2.3	12	1.9	3.9	0.22	0.08	0.08	2.3	0.005	0.34	23.3	0.7	0.03	85	0.24	0.02	0.7	4.5	49	9.5	27.3	-0.002	0.01	0.05	1.3	0.4	2.4	0.23	0.05	0.68	0.08	1.2	4	0.5	4.4	6	87.8	<0.001			
121030 B1-12		0.01	0.63	0.2	30	0.38	0.08	0.02	-0.02	48.5	2.3	12	1.9	3.9	0.22	0.08	0.08	2.3	0.005	0.34	23.3	0.7	0.03	85	0.24	0.02	0.7	4.5	49	9.5	27.3	-0.002	0.01	0.05	1.3	0.4	2.4	0.23	0.05	0.68	0.08	1.2	4	0.5	4.4	6	87.8	<0.001		
131030 B1-13		0.01	0.63	0.2	30	0.38	0.08	0.02	-0.02	48.5	2.3	12	1.9	3.9	0.22	0.08	0.08	2.3	0.005	0.34	23.3	0.7	0.03	85	0.24	0.02	0.7	4.5	49	9.5	27.3	-0.002	0.01	0.05	1.3	0.4	2.4	0.23	0.05	0.68	0.08	1.2	4	0.5	4.4	6	87.8	<0.001		
141030 B1-14		0.01	0.75	0.2	100	0.64	0.12	0.01	-0.02	38.4	1.1	4	0.87	2.4	0.16	2.53	0.05	2.4	0.009	17.6	2.4	0.01	142	0.33	0.02	0.32	0.02	2.6	5.0	15.6	0.05	0.05	0.1	0.2	0.5	6.5	0.53	0.05	0.46	0.11	0.13	9	1.7	3.5	16	67.5	<0.001			
151030 B1-15		0.03	0.75	0.2	100	0.64	0.12	0.01	-0.02	38.4	1.1	4	0.87	2.4	0.16	2.53	0.05	2.4	0.009	17.6	2.4	0.01	142	0.33	0.02	0.32	0.02	2.6	5.0	15.6	0.05	0.05	0.1	0.2	0.5	6.5	0.53	0.05	0.46	0.11	0.13	9	1.7	3.5	16	67.5	<0.001			
161030 B1-16		0.01	0.31	0.3	220	0.55	0.11	0.02	-0.02	15.7	1.1	4	0.87	1.9	0.29	2.08	0.06	2.8	0.01	0.54	1.2	0.01	142	0.33	0.02	0.32	0.02	2.6	5.0	15.6	0.05	0.05	0.1	0.2	0.5	6.5	0.53	0.05	0.46	0.11	0.13	9	1.7	3.5	16	67.5	<0.001			
171030 B1-17		0.01	0.31	0.3	220	0.55	0.11	0.02	-0.02	15.7	1.1	4	0.87	1.9	0.29	2.08	0.06	2.8	0.01	0.54	1.2	0.01	142	0.33	0.02	0.32	0.02	2.6	5.0	15.6	0.05	0.05	0.1	0.2	0.5	6.5	0.53	0.05	0.46	0.11	0.13	9	1.7	3.5	16	67.5	<0.001			
181030 B1-18		0.02	1.19	0.2	90	0.38	0.15	0.02	0.02	15.95	1	4	0.8	2	0.16	2.42	-0.05	2.6	0.009	0.94	0.5	1.6	0.01	99	0.32	0.08	0.42	0.9	60	7.3	33.5	-0.002	0.01	0.05	1.1	2	0.4	2.2	0.38	0.05	0.33	0.09	0.17	1.2	0.5	4.1	80.6	<0.001		
191030 B1-19		0.02	1.19	0.2	90	0.38	0.15	0.02	0.02	15.95	1	4	0.8	2	0.16	2.42	-0.05	2.6	0.009	0.94	0.5	1.6	0.01	99	0.32	0.08	0.42	0.9	60	7.3	33.5	-0.002	0.01	0.05	1.1	2	0.4	2.2	0.38	0.05	0.33	0.09	0.17	1.2	0.5	4.1	80.6	<0.001		
201030 B1-20		0.01	0.23	0.2	100	0.46	0.12	0.02	0.02	36.8	0.8	6	1	3.6	0.63	3.05	0.07	2.2	0.015	0.87	17.6	4.2	0.01	189	0.37	0.02	18.4	2.3	110	9.8	21.1	-0.002	0.01	0.14	2.5	0.6	14.5	0.71	-0.05	5.4	30.4	0.13	1.2	5	0.8	4.9	11	81.6	<0.001	
211030 B1-21		0.01	0.87	1.1	200	0.55	0.19	0.02	-0.02	19.2	0.8	4	0.79	1.6	0.28	2.11	-0.05	2.4	0.011	0.55	9.1	3.1	0.01	334	0.32	0.04	1.4	60	8.5	21	-0.002	0.01	0.11	1.7	2	0.6	14.5	0.71	-0.05	5.4	30.4	0.13	1.2	5	0.8	4.9	11	81.6	<0.001	
221030 B1-22		0.02	0.4	0.2	30	0.18	0.09	0.01	-0.02	16.6	1.7	5	0.73	1.5	0.15	1.33	-0.05	1.6	0.006	0.22	8.9	3.4	0.01	74	0.18	0.03	1.1	40	5.1	11.6	-0.002	0.01	0.05	1.1	2	0.4	2.2	0.38	0.05	0.33	0.09	0.17	1.2	0.5	4.1	80.6	<0.001			
231030 B1-23		0.02	0.49	0.2	60	0.39	0.08	0.02	-0.02	11.6	0.9	7	0.89	1.9	0.07	1.3	-0.05	1.3	0.005	0.16	5.5	2.6	0.01	31	0.18	0.01	0.32	2.6	30	4.1	8.3	-0.002	0.01	0.05	1.1	2	0.3	0.7	0.15	-0.05	3	0.72	0.07	0.6	4	0.6	2.5	9	38.1	<0.001
241030 B1-24		0.02	0.35	0.2	80	0.27	0.16	0.01	-0.02	13.9	0.4	6	0.92	1.8	0.13	1.39	-0.05	2.6	0.008	0.22	8.8	2.4	0.02	63	0.26	0.02	0.36	2.2	60	7.1	28.1	-0.002	0.01	0.05	1.1	2	0.3	0.7	0.15	-0.05	3	0.72	0.07	0.6	4	0.6	2.5	9	38.1	<0.001
251030 B1-25		0.01	0.67	0.2	100	0.64	0.12	0.01	-0.02	15.45	0.6	5	1.65	2.1	0.16	2.53	0.05	2.4	0.009	17.6	2.4	0.01	142	0.33	0.02	0.32	0.02	2.6	5.0	15.6	0.05	0.05	0.1	0.2	0.5	6.5	0.53	0.05	0.46	0.11	0.13	9	1.7	3.5	16	67.5	<0.001			
261030 B1-26		0.01	1.04	1.2	100	0.64	0.12	0.01	-0.02																																									

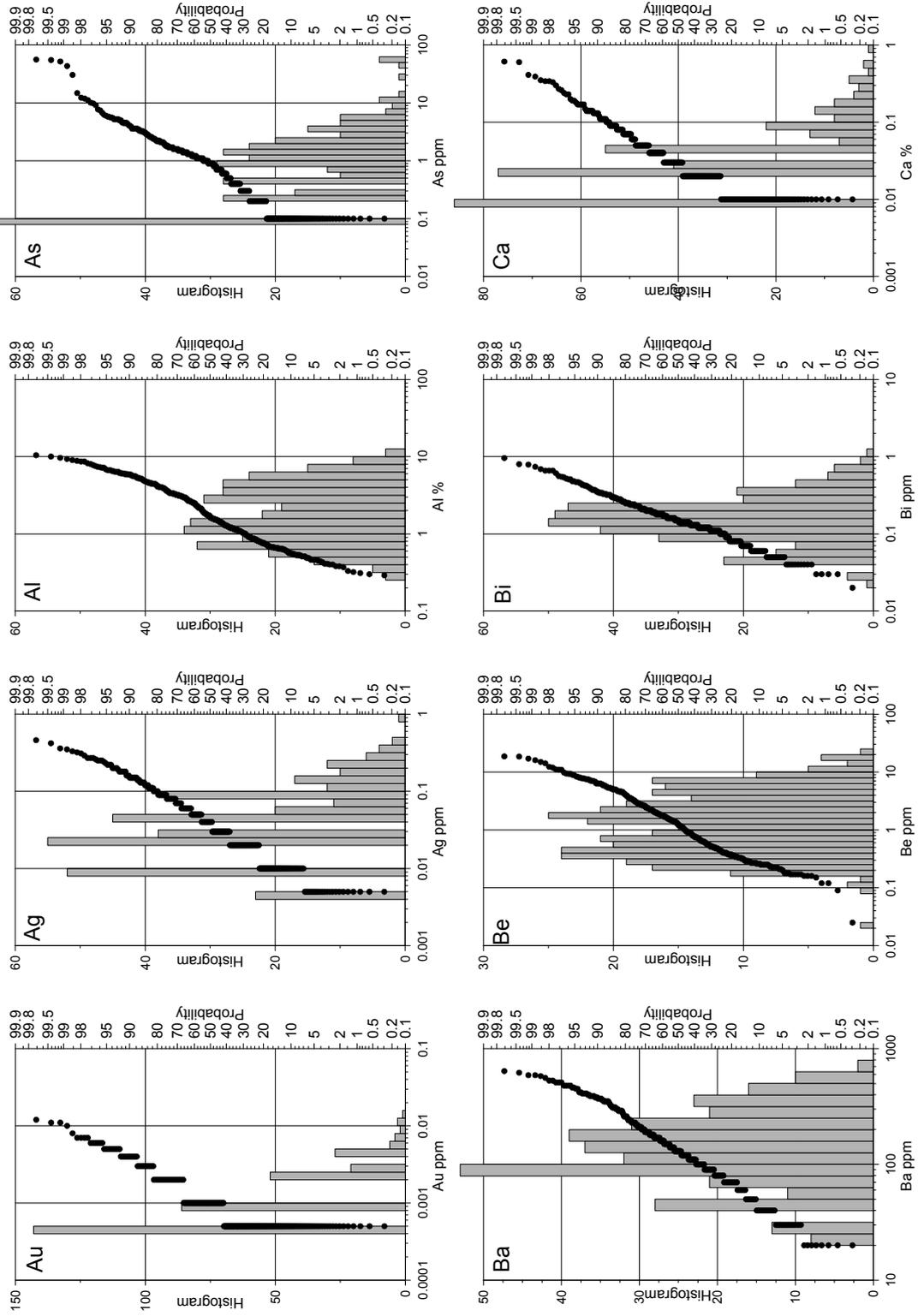
Appendix 13 Result of Stream Sediments Geochemistry 4/5

Ser	ID	Ag	Al	As	Ba	Be	Bi	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr	ppm	
250	1030 D2 - 19	0.09	1.96	1.10	3.58	0.09	0.09	0.17	7.97	8.2	14	2.21	1.71	4.69	0.06	2.3	0.07	0.08	5.22	3.7	0.03	3.56	0.32	0.01	11.2	8.9	5.50	19	7.7	-0.002	0.05	0.21	3.3	3	0.5	6.2	0.82	0.145	0.26	13	19	0.6	32.3	29	58.5	0.011				
251	1030 D2 - 20	0.06	0.32	0.30	0.16	0.04	0.04	-0.02	0.715	0.4	5	0.05	0.75	0.09	0.93	0.06	1.1	0.07	0.001	4.2	1.3	0.20	5.2	0.26	0.07	0.02	1.9	0.19	0.015	-0.005	0.33	1.5	2	0.2	1.9	0.15	-0.005	0.52	0.12	0.06	0.7	5	0.4	0.3	5.9	0.84	0.001			
252	1030 D2 - 21	0.06	0.32	0.30	0.16	0.04	0.04	-0.02	0.715	0.4	5	0.05	0.75	0.09	0.93	0.06	1.1	0.07	0.001	4.2	1.3	0.20	5.2	0.26	0.07	0.02	1.9	0.19	0.015	-0.005	0.33	1.5	2	0.2	1.9	0.15	-0.005	0.52	0.12	0.06	0.7	5	0.4	0.3	5.9	0.84	0.001			
253	1030 D2 - 22	0.215	0.68	0.10	0.23	0.13	0.04	0.14	81.4	32	26	2.42	4.19	3.68	0.06	2.1	0.29	0.06	0.08	20.3	19.5	0.02	1.9	0.06	0.01	1.8	0.55	0.3	0.15	-0.002	0.13	0.05	1.5	2	0.2	5.7	0.1	-0.005	1.1	17	0.1	21.6	17	9.8	0.005					
254	1030 D2 - 23	0.04	0.68	0.3	1.10	0.49	0.08	0.09	35.2	3.8	8	0.5	8.4	1.38	1.08	-0.005	0.17	0.3	0.005	17.3	0.3	0.02	11.30	0.45	0.01	1.9	0.65	1.30	0.34	0.34	-0.002	0.13	0.05	1.5	2	0.2	5.7	0.1	-0.005	1.1	17	0.1	21.6	17	9.8	0.005				
255	1030 D2 - 24	0.12	2.83	1	40	0.89	0.18	0.02	-0.02	68.4	12	23	0.10	1.51	0.29	0.82	-0.005	0.33	0.031	0.05	26.7	3.9	0.02	3.4	0.27	0.01	21.4	8	300	14.7	5.1	-0.002	0.01	0.28	5.5	3	1.1	6.5	1.56	-0.005	2.8	0.08	2.6	1	1.93	12	10.15	0.001		
256	1030 D2 - 25	0.09	1.47	1.70	3.26	0.07	0.17	0.12	7.4	5	10	1.03	1.14	2.11	3.41	0.06	0.9	0.01	0.05	36.8	2.4	0.04	1.43	0.27	0.02	7.4	10.1	15.40	15.5	5.7	-0.002	0.11	0.20	2.4	0.2	1.64	0.51	-0.005	2.9	0.08	1.8	3	2.9	0.4	2.73	23	31.7	0.001		
257	1030 D2 - 26	0.05	0.79	4.3	3.50	2.34	0.06	0.41	0.19	38.2	8.6	0.76	6.3	1.19	-0.005	0.5	2.4	0.038	0.06	20.1	1.4	0.04	2.51	0.52	0.02	14.1	14.60	6.2	3.9	-0.002	0.14	0.05	1.4	0.2	1.61	0.22	-0.005	1.6	0.44	1.0	0.6	7.2	3.39	37	16.6	-0.001				
258	1030 D2 - 27	0.316	3.99	3.2	1.90	18.5	0.1	0.1	143.5	15.5	36	0.79	78.9	2.87	0.85	1.5	2.4	0.038	0.09	58.2	13.2	0.03	2.68	0.65	0.02	25.3	74.4	11.40	27.8	0.2	-0.002	0.04	0.17	9.4	1	1.6	1.39	-0.005	9.7	0.21	0.23	12.8	68	1	5.3	24	88.8	-0.001		
259	1030 D2 - 28	0.05	0.41	5.61	1.10	0.84	0.04	0.18	0.25	50.7	16.9	3	5.7	2.6	1.37	0.05	0.3	0.005	0.06	28.5	0.5	0.02	1.93	0.01	2.5	10.20	3.2	18.00	4.8	4.8	-0.002	0.13	0.05	1.3	0.3	0.2	1.72	0.17	-0.005	1.2	0.02	0.25	0.6	1.5	0.2	34.4	14	1.9	0.002	
260	1030 D2 - 29	0.05	0.51	4	3.10	1.77	0.05	0.34	0.22	21.1	6.3	0.58	4.7	3.25	1.4	0.37	0.005	0.008	10.4	0.9	0.04	0.78	0.5	0.02	3.2	12.5	18.00	4.8	4.8	-0.002	0.13	0.05	1.3	0.3	0.2	1.72	0.17	-0.005	1.2	0.02	0.25	0.6	1.5	0.2	34.4	14	1.9	0.002		
261	1030 D2 - 30	0.07	0.76	3.5	2.10	1.4	0.05	0.19	11.1	6.8	21	4	0.61	5.1	1.036	0.76	0.4	0.006	0.09	3.4	0.6	0.05	0.98	0.02	3.6	7.4	13.00	8.3	5.5	-0.002	0.13	0.05	1.2	0.2	1.02	0.2	0.05	1.4	0.036	0.25	0.3	11	0.2	2.89	18	48.8	0.006			
262	1030 D2 - 31	0.15	4.9	7.4	20	3.36	0.08	0.05	0.08	32.8	24.3	1.46	3.58	3.79	0.66	-0.005	0.1	0.015	0.07	28.4	3.7	0.02	2.95	0.02	3.6	7.4	13.00	8.3	5.5	-0.002	0.13	0.05	1.2	0.2	1.02	0.2	0.05	1.4	0.036	0.25	0.3	11	0.2	2.89	18	48.8	0.006			
263	1030 D2 - 32	0.12	4.7	0.3	70	3.85	0.11	0.01	0.02	38.8	26	9	1.67	5.6	1.23	0.72	0.06	0.029	0.23	16	3.8	0.02	3.5	0.02	3.6	7.4	13.00	8.3	5.5	-0.002	0.13	0.05	1.2	0.2	1.02	0.2	0.05	1.4	0.036	0.25	0.3	11	0.2	2.89	18	48.8	0.006			
264	1030 D2 - 33	0.15	4.9	7.4	20	3.36	0.08	0.05	0.08	32.8	24.3	1.46	3.58	3.79	0.66	-0.005	0.1	0.015	0.07	28.4	3.7	0.02	2.95	0.02	3.6	7.4	13.00	8.3	5.5	-0.002	0.13	0.05	1.2	0.2	1.02	0.2	0.05	1.4	0.036	0.25	0.3	11	0.2	2.89	18	48.8	0.006			
265	1030 D2 - 34	0.18	3.2	5.51	2.60	3.84	0.16	0.17	0.13	29.2	21	5	4.9	15.7	4.06	1.2	0.4	0.036	0.12	11.7	8.9	0.05	2.48	0.66	0.04	5.3	11.40	14.5	7.9	-0.002	0.07	0.06	1.9	2	0.2	1.53	0.19	-0.005	1.4	0.032	0.17	0.2	0.2	1.24	27	50.7	0.004			
266	1030 D2 - 35	0.04	3.09	1	40	0.12	0.16	0.02	-0.02	7.4	12	2.2	1.26	0.5	0.69	0.51	0.2	0.03	0.06	56.3	0.3	0.03	1.14	0.26	0.01	21.4	18	170	21.5	13.2	-0.002	0.02	0.1	0.46	8.1	1.5	0.38	0.65	0.67	0.145	0.36	12.8	63	0.8	51.8	28	57.3	0.007		
267	1030 D2 - 36	0.15	4.6	2	110	14.3	0.24	0.04	5.67	3	22	0.6	2.61	1.73	3	0.8	0.2	0.047	0.06	26.6	4.5	0.02	1.36	0.62	0.01	33.8	15.2	7.0	21.9	8	-0.002	0.02	0.26	8.7	2	1.5	0.72	1.5	-0.005	9.5	0.373	0.1	8.4	1.2	9.2	10	89.2	-0.001		
268	1030 D2 - 37	0.02	0.4	0.5	20	-0.005	0.05	0.01	-0.02	12.4	0.4	0.31	3.2	1.1	-0.005	1.1	1.7	0.029	0.11	38.4	1.8	0.04	1.1	0.20	0.01	4.1	1	20	7.1	1.4	-0.002	0.01	0.17	1	1	0.4	0.19	0.15	-0.005	2.6	0.5	0.3	2.6	3	36.7	0.003				
269	1030 D2 - 38	0.09	2.69	1.7	1.50	2.63	0.12	0.39	0.31	10.6	12.3	2.4	3.08	13.8	2.7	6.93	0.1	0.022	0.11	38.4	1.8	0.04	1.1	0.20	0.01	4.1	1	20	7.1	1.4	-0.002	0.01	0.17	1	1	0.4	0.19	0.15	-0.005	2.6	0.5	0.3	2.6	3	36.7	0.003				
270	1030 D2 - 39	0.02	0.29	0.6	20	0.09	0.08	0.01	-0.02	2.5	0.6	0.5	2.4	0.15	0.87	-0.005	1.6	-0.005	0.05	11	2.6	0.01	1.3	0.06	-0.01	3.3	2.6	4.5	4.7	-0.002	0.01	0.07	1	2	0.3	1.4	0.17	-0.005	6.3	0.155	0.26	3	1.8	0.8	29.2	54	58.4	0.007		
271	1030 D2 - 40	0.11	3.35	1.4	70	3.29	0.13	0.14	11.1	14.8	71	2.8	3.82	24.2	4.38	8.72	0.14	1.6	0.03	0.16	60	12.4	0.05	2.18	0.07	0.02	15.3	23.7	970	58.8	15.2	-0.002	0.06	0.25	6.6	3	1.2	11.9	0.01	-0.005	7.2	0.194	0.24	23	81	38	44.7	35	58.8	0.011
272	1030 D2 - 41	0.11	3.35	1.4	70	3.29	0.13	0.14	11.1	14.8	71	2.8	3.82	24.2	4.38	8.72	0.14	1.6	0.03	0.16	60	12.4	0.05	2.18	0.07	0.02	15.3	23.7	970	58.8	15.2	-0.002	0.06	0.25	6.6	3	1.2	11.9	0.01	-0.005	7.2	0.194	0.24	23	81	38	44.7	35	58.8	0.011
273	1030 D2 - 42	0.12	4.7	0.3	70	3.85	0.11	0.01	0.02	38.8	26	9	1.67	5.6	1.23	0.72	0.06	0.029	0.23	16	3.8	0.02	3.5	0.02	3.6	7.4	13.00	8.3	5.5	-0.002	0.13	0.05	1.2	0.2	1.02	0.2	0.05	1.4	0.036	0.25	0.3	11	0.2	2.89	18	48.8	0.006			
274	1030 D2 - 43	0.15	4.9	7.4	20	3.36	0.08	0.05	0.08	32.8	24.3	1.46	3.58	3.79	0.66	-0.005	0.1	0.015	0.07	28.4	3.7	0.02	2.95	0.02	3.6	7.4	13.00	8.3	5.5	-0.002	0.13	0.05	1.2	0.2	1.02	0.2	0.05	1.4	0.036	0.25	0.3	11	0.2	2.89	18	48.8	0.006			
275	10																																																	

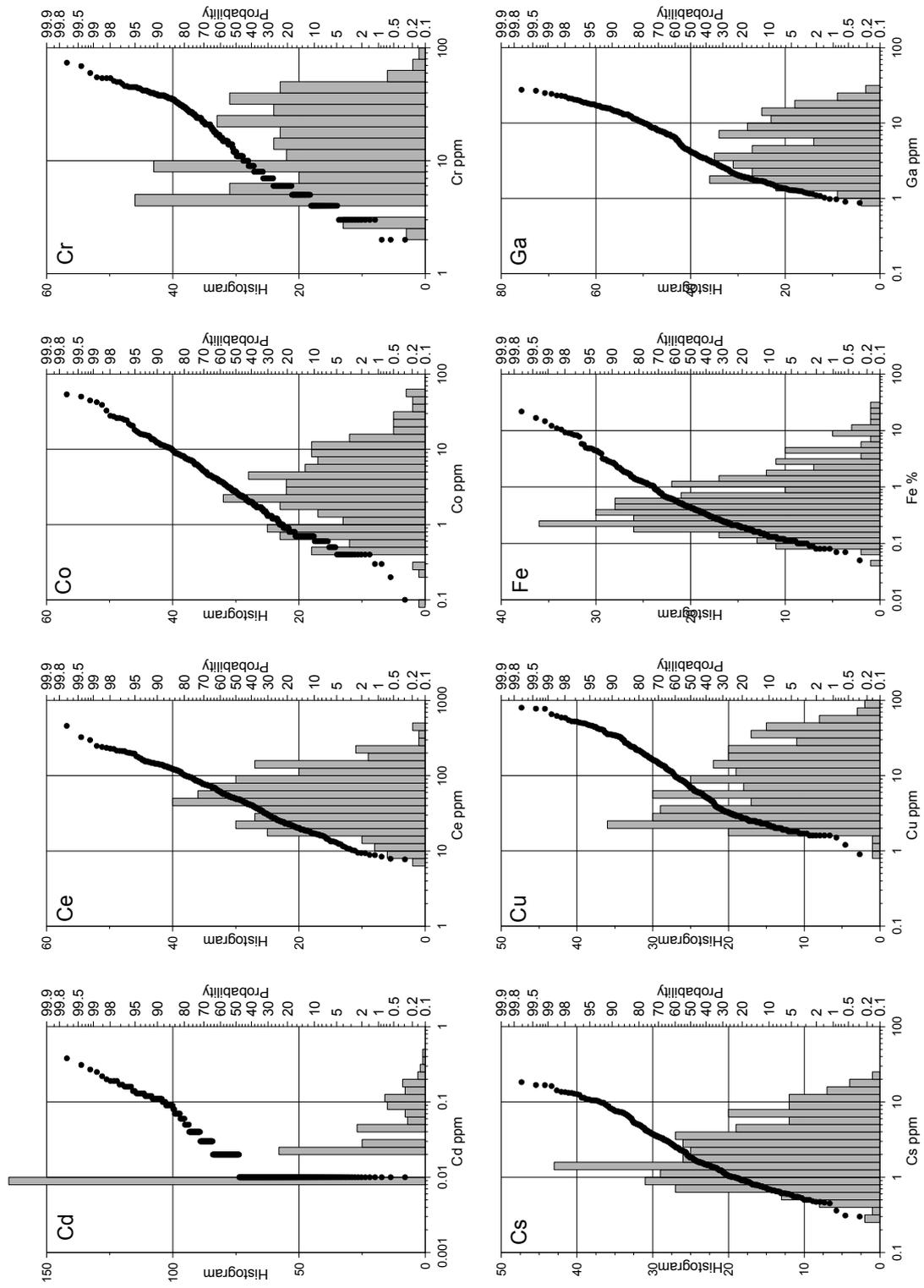
Appendix 13 Result of Stream Sediments Geochemistry 5/5

Ser	ID	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	In	K	La	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr	Au	
		ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm		
333	1030 D4 - 01	0.12	2.94	4.6	170	1.21	0.18	0.05	0.05	53.2	1.5	24	2.45	27	0.85	7.11	0.05	2	0.024	0.08	26.8	5.3	0.03	55	0.39	0.01	17.3	87.7	680	38.4	7.3	<0.002	0.05	0.43	4.3	2	1.3	10.2	1.04	<0.05	6.2	0.2	0.12	3	21	0.9	13.7	85	66.1	0.001
334	1030 D4 - 02	0.07	0.67	4.5	400	2.83	0.42	0.35	0.11	15.35	6.5	8	1.08	20.9	1.97	<0.05	0.4	0.008	0.06	16.9	1.3	0.06	176	0.77	0.02	4.1	12.5	12.90	29	5.1	<0.002	0.15	0.36	1.3	2	0.5	23.4	1	<0.05	1.4	0.045	0.13	0.9	10	0.2	6.2	86	15.2	0.003	
335	1030 D4 - 03	0.09	4.1	11	150	2.92	0.13	0.07	0.08	68.1	6	27	5.59	5.2	0.46	6.29	0.07	2.6	0.028	0.13	38.7	6.2	0.05	148	0.32	0.01	16.9	17.2	19.0	15.8	12.3	<0.002	0.04	0.31	5.6	2	0.9	8.3	0.3	<0.05	7.7	0.264	0.19	9.7	1.3	32.8	28	52.4	0.002	
336	1030 D4 - 04	0.19	3.11	7	150	6.33	0.17	0.04	0.04	150	4.7	39	3.21	165.3	1.99	10.75	0.12	2.8	0.04	0.07	70.9	11.9	0.03	102	0.64	0.01	26.9	24.2	810	20.1	6.4	<0.002	0.04	0.31	8.3	3	2	5.2	1.59	<0.05	9.8	0.276	0.2	2.3	59	1.2	76.2	33	38.5	0.002
337	1030 D4 - 05	0.2	4.01	3.6	100	5.33	0.17	0.04	0.04	150	4.7	39	3.21	165.3	1.99	10.75	0.12	2.8	0.04	0.07	70.9	11.9	0.03	102	0.64	0.01	26.9	24.2	810	20.1	6.4	<0.002	0.04	0.31	8.3	3	2	5.2	1.59	<0.05	9.8	0.276	0.2	2.3	59	1.2	76.2	33	38.5	0.002
338	1030 D4 - 06	0.08	2.26	0.7	70	1.58	0.1	0.01	<0.02	98.4	0.9	24	3.46	54.6	0.38	5.95	0.09	1.9	0.024	0.09	39.2	6.6	0.03	30	0.2	0.01	13.9	5.6	250	9.6	7.8	<0.002	0.02	0.3	5.2	2	1.2	6.2	0.83	<0.05	5.7	0.175	0.18	1.3	29	0.7	68.8	8	57.4	<0.001
339	1030 D4 - 07	0.06	4.63	2	150	2.68	0.21	0.02	<0.02	129	15.1	50	6.33	32.3	1.1	1.3	0.09	4.3	0.051	0.19	56.5	21.8	0.06	223	0.45	0.01	36.7	24.8	150	24.6	21.4	<0.002	0.01	0.64	9.8	2	3.1	7.8	2.29	<0.05	14.6	0.583	0.49	6.2	45	1.8	51.9	23	139.5	0.003
340	1030 D4 - 10	0.09	3.5	1.6	110	0.79	0.18	0.04	0.02	74.1	2.5	30	3.7	17.1	0.8	9.52	0.07	3.1	0.036	0.1	36.5	8.2	0.04	110	0.46	0.01	27	8.5	230	17.4	8.8	<0.002	0.01	0.36	6.1	2	2	8.5	1.89	<0.05	10.2	0.362	0.13	4	23	1.4	24.4	19	99.6	0.002
341	1030 D4 - 11	0.09	3.4	1.2	110	2.16	0.16	0.04	0.02	64.2	3.2	26	3.14	33.2	0.64	9.88	0.05	2.4	0.031	0.11	33	9.4	0.04	119	0.36	0.01	21.2	12.7	200	16.1	9.4	<0.002	0.01	0.25	5.9	2	1.8	7.3	1.26	<0.05	8.5	0.251	0.15	6.3	17	22.5	24	76.5	0.003	
342	1030 D4 - 12	0.15	2.96	5.6	110	3.06	0.12	0.04	0.04	78	2.9	30	5.3	34.1	0.69	7.71	0.06	2.6	0.031	0.14	36.3	9.6	0.04	75	0.33	0.01	17.8	13.2	790	14	15.2	<0.002	0.02	0.39	5.8	2	1.6	8.5	1.07	<0.05	7.9	0.248	0.45	5.1	59	0.9	35.7	27	79.1	0.002
343	1030 D4 - 13	0.2	3.61	5.2	210	3.06	0.15	0.09	0.13	153	6.9	36	4.57	28.5	1.9	9.42	0.15	2.5	0.035	0.15	62.1	13.2	0.06	196	0.55	0.02	17.7	33.8	2300	18.5	18.5	<0.002	0.02	0.31	6.6	3	1.7	9.1	1.07	<0.05	7.9	0.248	0.45	5.1	59	0.9	35.7	27	79.1	0.002
344	1030 D4 - 14	0.06	1.96	2.1	150	1.99	0.08	0.06	0.04	55.7	9	21	3.14	15.9	0.51	5.14	0.05	1.5	0.019	0.12	21.8	22.4	0.04	146	0.31	0.02	37	16	780	7.9	11.9	<0.002	0.03	0.28	3.5	2	1	6	0.52	<0.05	4.5	0.146	0.21	2	29	0.5	18.3	31	44.7	0.002
345	1030 D4 - 15	0.03	0.76	1	80	0.87	0.05	0.03	<0.02	22.3	3.1	12	0.91	11.2	0.86	2.2	<0.05	1.4	0.01	0.11	19.6	8.4	0.02	83	0.19	0.01	7.5	3.4	160	5	7.9	<0.002	0.01	0.29	1.4	2	0.7	0.51	0.37	<0.05	2.7	0.167	0.12	11.4	17	0.5	7.3	6	42.2	0.002

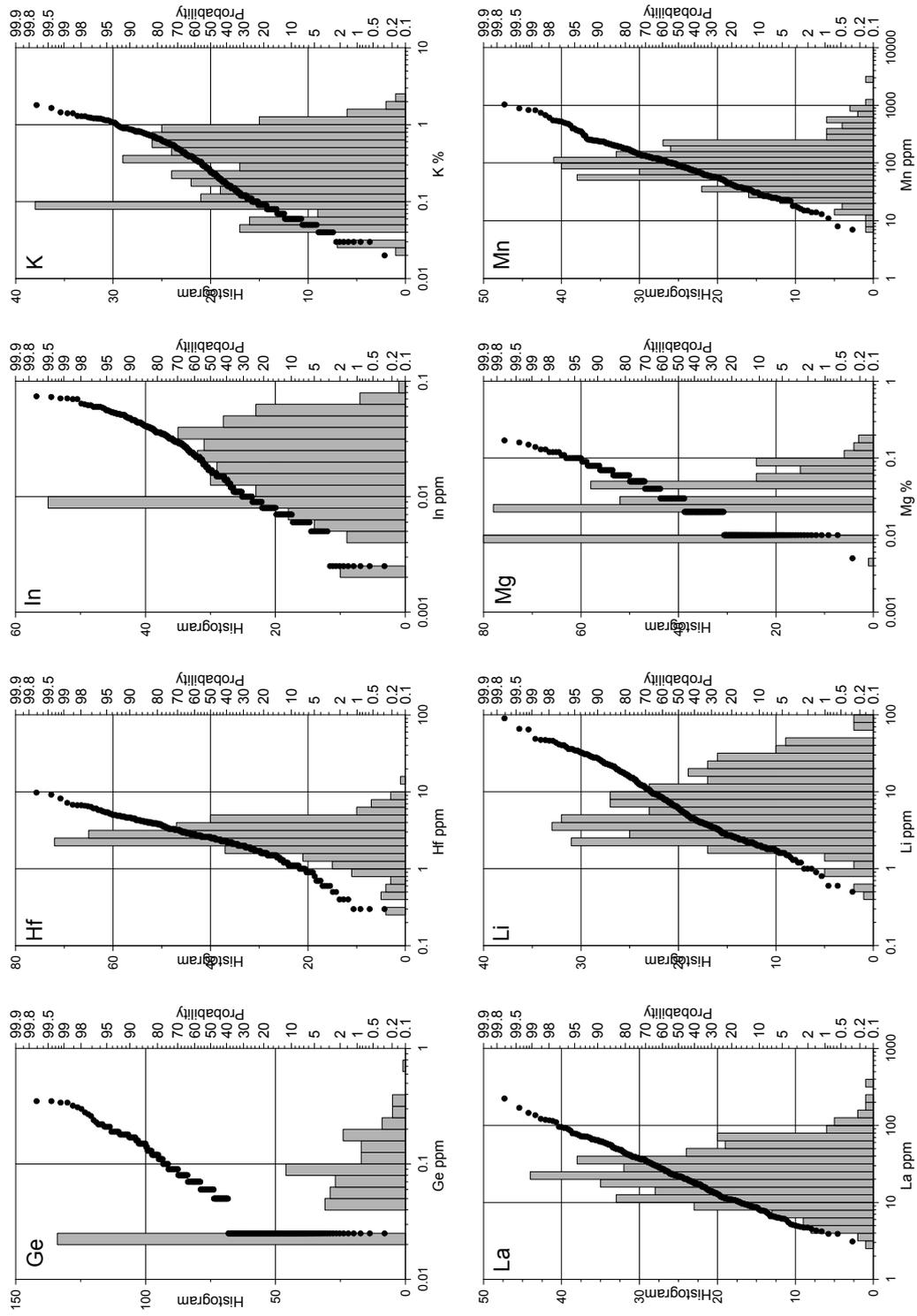
Appendix V-14 Histogram and Cumulative Frequency of Stream Sediments Geochemistry (1)



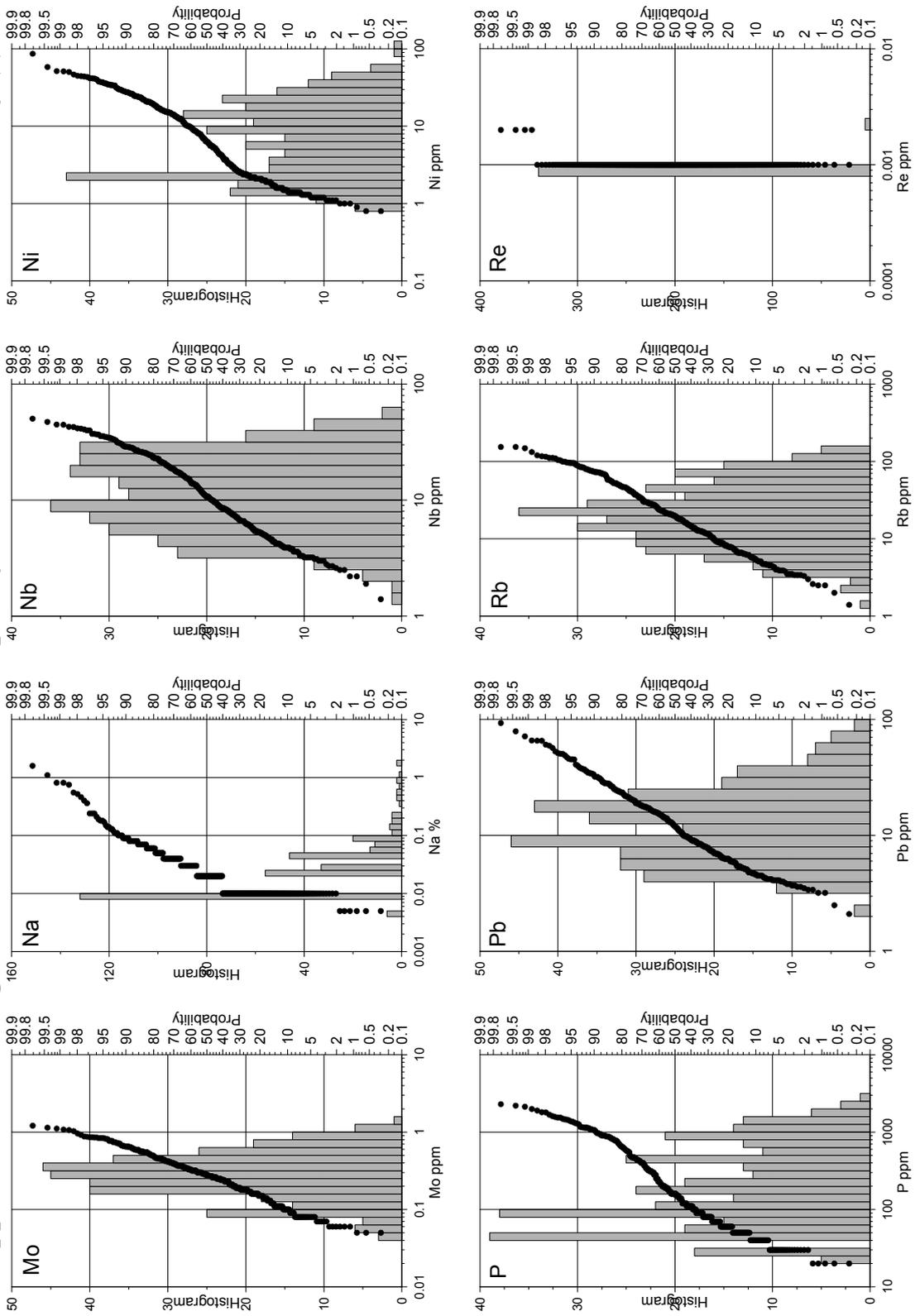
Appendix V-14 Histogram and Cumulative Frequency of Stream Sediments Geochemistry (2)



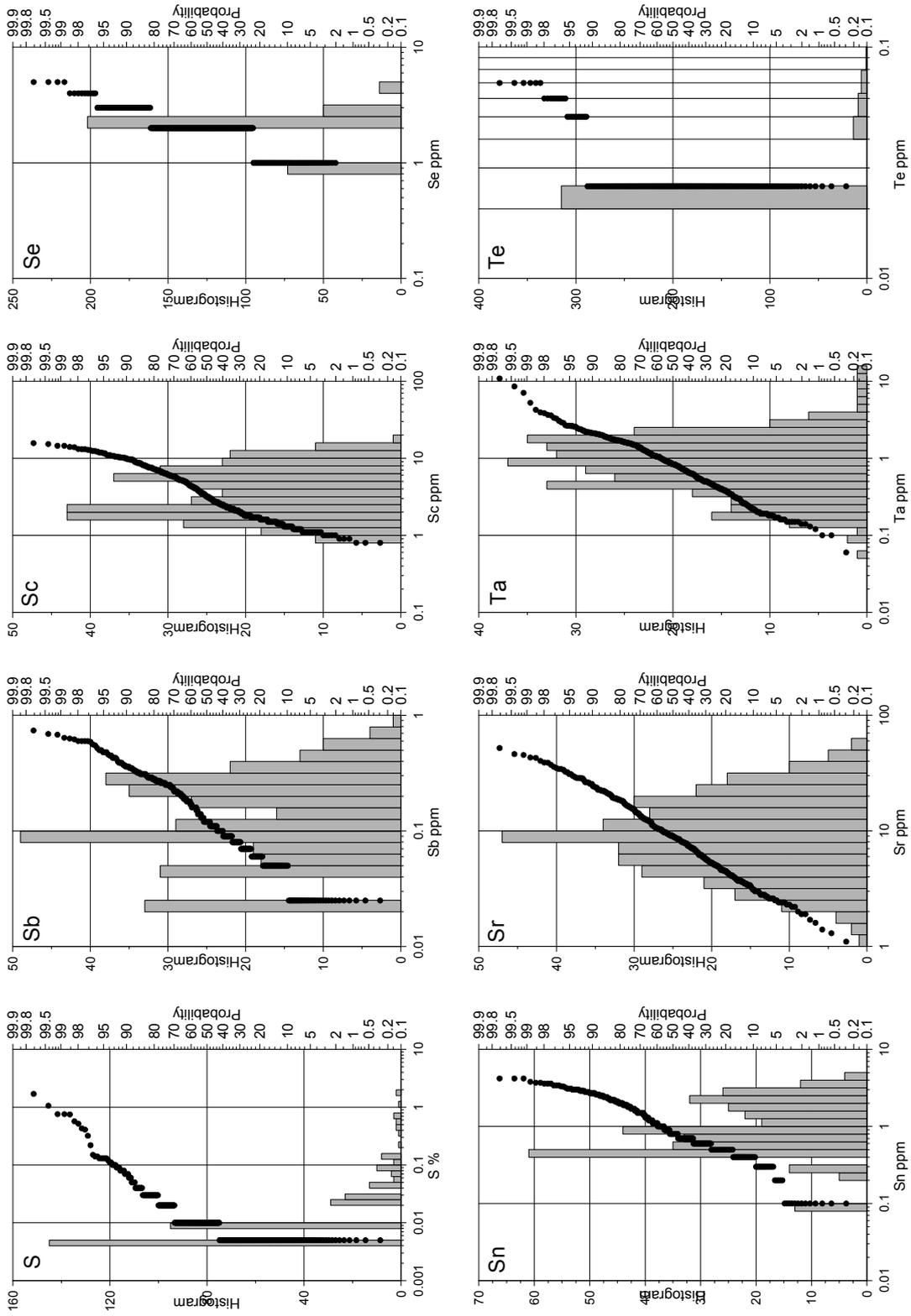
Appendix V-14 Histogram and Cumulative Frequency of Stream Sediments Geochemistry (3)



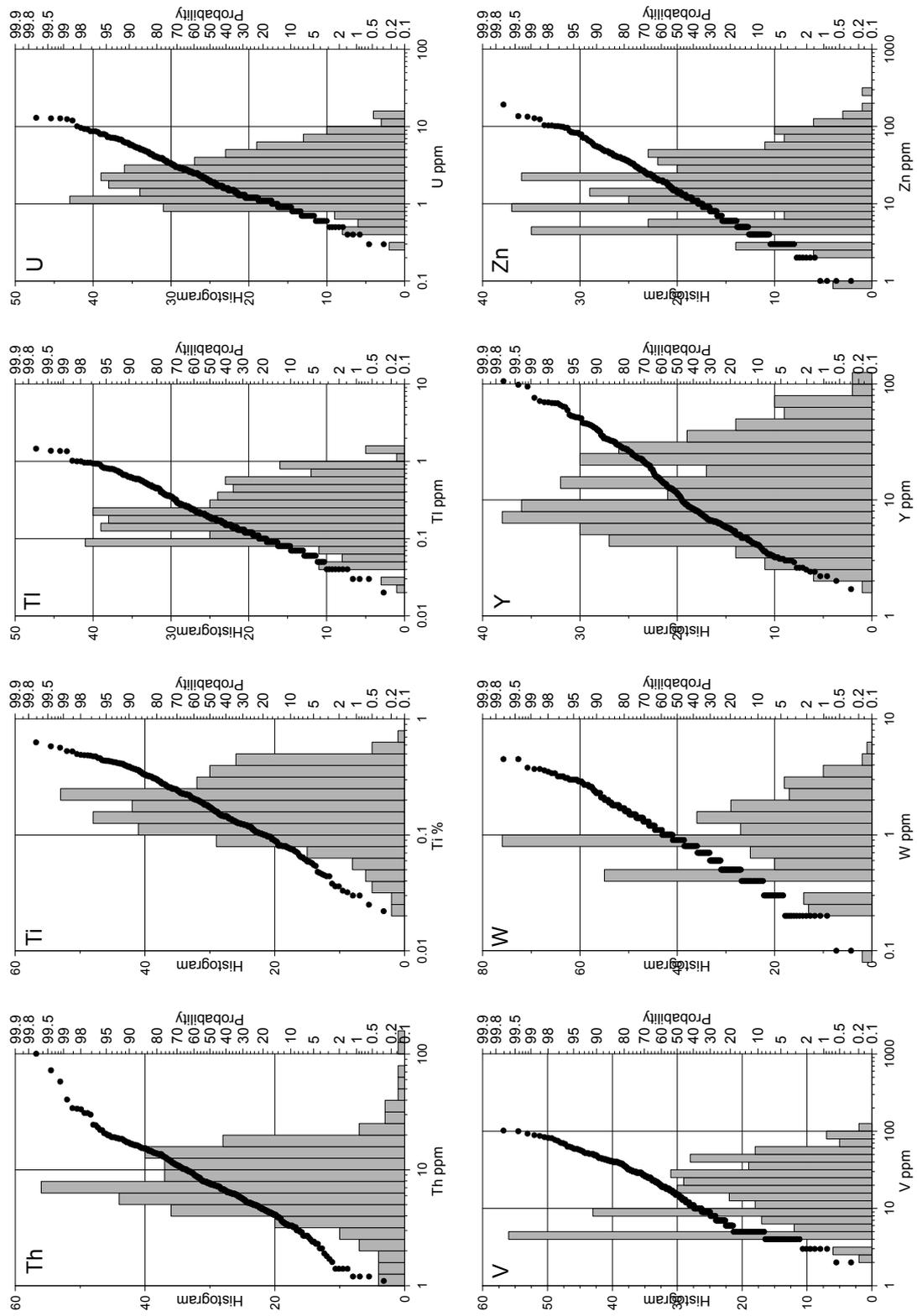
Appendix V-14 Histogram and Cumulative Frequency of Stream Sediments Geochemistry (4)



Appendix V-14 Histogram and Cumulative Frequency of Stream Sediments Geochemistry (5)



Appendix V-14 Histogram and Cumulative Frequency of Stream Sediments Geochemistry 6)



Appendix V-14 Histogram and Cumulative Frequency of Stream Sediments Geochemistry (7)

